SELF-MODIFICATION OF COLLEGE STUDENTS' STUDY BEHAVIOR VIA A "LEARNING ACCELERATION" TAPE TREATMENT PROGRAM

By

EDWARD J. REILLY

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To my wife, Kate
and my daughter, Jessica.

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Edward J. Reilly

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The purpose of this study was to examine the effectiveness of a "learning acceleration" tape treatment program designed to improve college students' academic performance. The effects of the treatment were evaluated by determining differences in final examination and course grade scores in Introductory Psychology, and post-treatment scores on the McGraw-Hill Inventory of Study Habits and Attitudes.

Subjects for this study consisted of 88 student volunteers enrolled in Introductory Psychology, 40 experimental subjects and 48 control subjects. Subjects were randomly assigned to the experimental group or the control group. The experimental group received treatment via tapes and the use of specified materials. This treatment was unique in that subjects worked independently and required little supervision.

The innovative treatment included self-management and study skills techniques. Several specific study methods were modeled, such as the use of a student "learning tape," a method calling for subjects to recite and tape record course material while studying. A unit on test-taking strategies and use of a behavioral contract also was included.

An analysis of variance was used to determine if significant differences existed between the groups following treatment on the measures mentioned above. The subjects' evaluation of the treatment program was also collected.

The results indicated that there was a significant difference between the scores of the experimental group and the control group on the final examination in Introductory Psychology. Experimental subjects had a mean score that was 8.46 points higher than that for control subjects. No significant differences were found on the other measures. The subjects' evaluation indicated that the treatment positively affected the quantity and the quality of the subjects' study behavior. The results showed that a high percentage of the respondents felt participation helped them increase time on task, and learn and remember material better.

The results of the study led to the following conclusions:

1. Participation in such a treatment program can produce significant increases in final examination scores in Introductory Psychology.

2. The use of a tape format program may allow counseling centers to deliver these types of services in a cost-effective manner.

3. This type of intervention offers a method of improving academic performance that students find acceptable and can use with little supervision.

CHAPTER I
INTRODUCTION

Statement of the Problem

Counselors in a college setting are often approached by students seeking more effective methods of study. Students typically present problems related to motivation, concentration, and self-management; they often exhibit reading and study habit deficits. McCaskill (1979) points out that many students who enter developmental programs in community colleges, universities or technical schools lack not only the basic skills of reading, writing, and performing numerical operations but also the more sophisticated skills of self-management. With the concern for student retention and the increase of those whom Cross (1971) calls the "new student," the need for more knowledge of applied methods associated with academic success seems crucial.

Reviewing the literature on academic underachievement, Krouse & Drouse (1981) report the absence of a unitary view concerning the etiology of underachievement. Johnston (1977) states that, although the study tactics engaged in by college students probably constitute the single most important variable which influences academic performance, the amount and quality of empirical research concerning student study behavior is "disproportionately miniscule" to this importance (p. 387). He characterizes the books which are available to instruct students in study skills as "mostly a hodgepodge of aged truism and untested common sense" (p. 475).

The confusion about the causes of underachievement may contribute to the mixed and inconclusive research results reported in the area of study skills. Although study skills courses are generally found to be effective in helping students increase their grade point average, this increase is not reliably related to course content, duration, or instructional method (Entwistle, 1960). The results from a number of studies indicate that successful and unsuccessful students adhere to a variety of the same rules (Brooks & Heston, 1945). Weigel & Weigel (1967) found that students may have an adequate knowledge of study skills but infrequently put them to use. Maxwell (1980) points out the futility of teaching students what they already know. Knowledge of better ways of studying has little value if many students are unable to implement them. Study habits acquired over years are not easily changed. While students may give lip service to the value of better study routines, it may be only rare students who are truly successful in improving their actual study habits.

A case in point in the study skills literature is SQ3R (see terms), Robinson's (1961) often cited method of improving study performance. This method appears regularly in how to study types of publications and research interventions. Practitioners observe that the problem with SQ3R is getting students to use it. In this regard, Wooster's (1953) dissertation concerning SQ3R with students at Ohio State University is insightful. He trained 29 students in the study method and required them to practice the method repeatedly in a laboratory setting. His follow-up found that <u>not one</u> of the students integrated this study technique into his or her own routines. He concludes that the students were not at a stage of readiness for learning such a technique. Rather,

what this research may illustrate is the difficulty of helping students to change their long established study behavior.

Recent attempts to improve students' comprehension and retention skills have employed pre-, post-, and interspersed questions (Frase, 1969; Mayer, 1975; Richards & DiVesta, 1974; Rothkopf & Bisbicos, 1967), pre- and post-supplementary organizing materials (Allen, 1970; Ausubel & Youssef, 1966; Bauman & Glass, 1969; Frase, 1969) and varying payoff conditions (McConkie & Meyer, 1974). According to Dansereau (1978) these studies generally indicate that the procedures have positive influences on the students' comprehension and retention strategies, but they require experimenter and teacher manipulations and are not directly transferable to less controlled situations.

Importantly, even in an innovative area of instructional technology such as Personalized Systems of Instruction, the issue of self-management, particularly procrastination, remains a problem. Born (1971) states that while the freedom offered by self-pacing is highly valued by most students, many students may commence work slowly under self-pacing conditions, fall seriously behind early in the course and eventually withdraw. It was the objective of the present research to help students better control and manage their study effort.

Self-Management

Maxwell (1980) observes that if students earn poor grades in college, parents and professors often conclude that they have "poor study habits." She views "poor study habits" as a euphemism for not studying or investing minimal time and effort in study. On the basis of decades of experience, Maxwell cautions that before assuming a student needs study assistance, the learning skills counselor should determine whether the student has studied at all.

It is a common observation by faculty members at the University of North Carolina at Wilmington (UNCW) that students would achieve higher grades if they simply studied more. Informal conversations with faculty members indicate their belief that students often do just enough academic work "to get by." Many faculty members on this campus feel that students spend too much time in non-academic activities to be successful in their course work. Students are often employed on a part-time basis and may find it difficult to balance the demands of work, social and recreational activities, with the need to study. Enjoyable activities, like socialization or stereo, may take precedence over study for many students. Such students may lack the self-management skills needed to delay gratification and attend adequately to their academic tasks.

Although underachievement may be caused by the interaction of several factors, students' inability to delay gratification and get on task is a sufficiently widespread problem to warrant a search for a better solution. The use of self-management techniques has become an increasingly popular alternative during the past decade (Goldfried & Merbaum, 1973; Kanfer & Phillips, 1970; Thoresen & Mahoney, 1974; Watson & Tharp, 1972). It is a particularly fruitful area of investigation for counselors as it addresses the central issue of helping clients implement desired behavioral change. The focus of the present research was on applied methods of improving study behavior. Students often present problems related to getting on task, and many students who would profit from establishing new study techniques have difficulty in breaking away from old habits. Counselors working with smoking, alcohol abuse,

and weight control have developed self-management approaches which may lend themselves well to programs of academic improvement. Although researchers have been interested in college students' study behavior for many decades, the application of behavioral self-management approaches to academic improvement is a fairly recent development.

The present research was designed to test the effectiveness of delivering self-management and study skills techniques via cassette tapes to small groups of college students who volunteered to work to improve their course grade. The self-management techniques included self-monitoring, self-reinforcement, planning, and the construction of a formal behavioral contract. The study skills techniques presented certain principles of learning, forgetting and remembering, several specific study strategies were modeled, and the benefits of systematic study and review were emphasized. A more detailed description of the treatment program is presented in Chapter III. The complete treatment program transcripts and materials are included in Appendices A and B.

Need for the Study

Pauk (1974) asserts that twenty years experience helping students develop better study skills has convinced him that any student who wants to be helped can be helped. He notes that improvement in one or two study techniques may open the door to the solution of a whole complex of related problems. On the basis of his experience he states that what students want is not theory or inspirational talk, but straight forward, practical instruction on how to tackle and overcome their special difficulties. They want something they can readily understand and apply, and something that works.

Unfortunately, counselors presently possess very few validated options to offer students interested in improving their grades. Robyak (1977) states that what emerges from the study skills literature offers the practitioner little in terms of validated content or techniques for helping students change behavior. He states that "the critical lack of data linking specific course content to increased performance could lead the counselor to develop a program of study behavior change that is haphazard and idiosyncratic" (p. 77).

Research on learning and memory has made only a modest contribution to the literature on study skills. Bjork (1979) states that "there is, among psychologists and educators, a remarkable pessimism with respect to the transformation of basic research on learning and memory to college teaching" (p. 15). Tulving (1972) makes the point clearly:

> After a hundred years of laboratory-based study of memory, we still do not seem to possess any concepts that the majority of workers would consider important or necessary. If one asked a dozen or so randomly selected, active memory researchers to compile a list of concepts without which they could not function, one would find little agreement among them, particularly if one excludes terms referring to experimental operations and data. Similarly, if one comares different current textbooks on memory, one discovers that there is little overlap among their subject indexes. It seems that important concepts of one author can apparently be easily dispensed with by another.
>
> What we have inherited are not solutions but problems requiring solutions. Some readers of the present essay will think that my assessment of the situation is not entirely realistic. All that such a reader needs to do to prove my position untenable is to compose a list - even a short list - of problems that have been solved or explained in a nontrivial or relatively permanent sense. Until such time that someone steps forth with such a list, however, it is difficult to resist the conclusion that ours is not yet a cumulative science, that we have not yet succeeded in constructing a stable foundation of knowledge and understanding of memory, and that the progress we have made in the past, therefore, must be regarded as rather modest. (p. 27)

The literature on learning strategies represented in the Psychological Abstracts, Dissertation Abstracts, ERIC, O'Neil's (1978) Learning Strategies, and the most recent reviews of Instructional Psychology in the Annual Review of Psychology (1977, 1981) indicates that applied research in this area is at a fundamental stage, as the findings are often inconclusive or contradictory. Faw & Waller (1976) point out that the studies that do exist in this area often exhibit methodological problems.

Field research on applied study skills faces many obstacles to be overcome. Some studies, however, have been successful in establishing significant treatment effects and offer a general direction to be pursued by further research. Several researchers have reported study improvement procedures that seem to work. Often, these researchers have left the confines of "study skills classes" and sought to apply their methods with students enrolled in content classes. The impact of learning assistance can be greatly increased if counselors are able to offer services to students enrolled in specific courses. This type of intervention can serve the student who is not interested in enrolling in a semester long study skills course, yet is willing to invest some effort in improvement in a specific class. Finally, counselors providing such services assume greater visibility among students, and provide student affairs divisions a vehicle for increased cooperation and credibility with faculty.

In discussing the irrelevance of some research in counseling, Goldman (1976) asks what difference will the findings make to anyone? In keeping with the needs described by Pauk, the present treatment was designed to provide students with a method that works, is easy to apply

and understand. A potential benefit of the present treatment approach is that large numbers of students can be taught practical techniques to help them improve their methods of study.

It becomes clear that a need exists to develop better applied methods of helping students improve academic performance. The present research study was designed to help fill this gap by building on the approaches of those studies that have shown some success in this area. The present researcher attempted to improve upon previous behavioral management/study skills interventions in the following ways:

1. Use of improved materials which included "test-wiseness" training.
2. Use of an improved delivery system.
3. Use of imagery (see terms) as a reinforcement option for subjects.
4. The construction of a formal behavioral contract and a student-made "learning tape" by subjects.
5. A more active design for greater participation by subjects.
6. The appeal of a "learning acceleration" treatment.

By so doing, it was hoped that this research project would make a unique contribution to the existing knowledge in this area.

Purpose of the Study

Students in a college setting often seek help from counselors regarding poor academic achievement. Students presenting such problems often lack sufficient self-management skills to spend adequate time on their academic tasks. For such students, the "payoff" for attending to academic tasks may seem very remote, and competing events, like socializing or stereo, may take precedence over study. Some students report that when they do study, they have very little to show for it.

Their study techniques may be so weak that, even when they study diligently, they may still receive low grades.

The purpose of this study was to evaluate the effectiveness of a "learning acceleration" tape treatment program in helping students achieve higher grades in Introductory Psychology classes. The treatment consisted of self-management and study skills techniques that were presented to students via cassette tape recordings once a week during five weekly sessions prior to the students' final examinations. In addition to the treatment tapes, each student was provided with an individual folder which contained charts, illustrations, and handouts that corresponded to the taped presentation. Students received the treatment in small groups with minimal supervision.

The treatment was designed to help the student increase time on task and become a more efficient learner. The techniques suggested in the treatment represent approaches that the researcher has found effective in counseling students over the past several years; previous research has established the value of many of these techniques. The following research questions were investigated:

1. What effect will the treatment have on the students' academic achievement in Psychology 105?
2. What effect will the treatment have on the students' study habits?
3. What effect will the treatment have on the students' attitudes toward study?
4. How will students perceive the treatment as a method of improving their study performance?

Unique Aspects of the Present Study

Several studies (Richards, 1974; Greiner, 1975) have reported success with similar treatments which combined self-management and study

skills techniques, but no study to date has included "test-wiseness" training, the use of imagery as a reinforcement option for subjects, construction of a formal behavioral contract, or the technique of having students make their own "learning tape." No previous study has relied exclusively on tapes to present a treatment of the present type.

One benefit of the treatment tape format was that it required subjects to be alert, as they were not aware of what task they would be asked to perform next. Similar treatments have relied on dittoed handouts to impart study suggestions. In such cases there was no assurance that the subjects had actually read the material. Additional benefits of tape format are discussed below in the Rationale.

It was hoped that this research would provide additional practical strategies for counselors seeking better ways to help college students improve their academic performance. Positive findings would support the value of the treatment and provide practitioners with empirically validated treatment alternatives.

Rationale

There were several reasons for the development of a "learning acceleration" tape treatment program. The objective of the treatment was to determine if learning skills training could be delivered effectively to large numbers of students enrolled in content courses. On the basis of a careful review of the research and the use of many of these methods with individual clients during the past several years, the researcher saw the treatment as a practical way of helping students implement a plan of academic improvement. Although each client is unique, sufficient numbers of students share common study-related problems to warrant testing the effect of a standard treatment package. The

treatment can serve students in a variety of courses; students need not enroll in a study skills course to acquire these learning strategies. The treatment in this experiment did not emphasize course content but focused on the process of managing study and study efficiency. Although Introductory Psychology was chosen as the target for application of the treatment methods, treatment was designed to be useful for students in a variety of courses.

Tape Format

The delivery of the treatment via cassette tape recordings was designed as a method of presenting routine methods of treatment to large numbers of clients. This approach was intended, ultimately, to allow better utilization of the counselor's time for more intensive, individual work with clients. Counselors might assign similar treatment tapes on the basis of individual or group needs. For the purpose of the study it was of interest to determine if such tapes would be effective for students with minimal counselor supervision.

In terms of research, the tape format avoided the necessity of scheduling students into a limited number of time blocks. Students were able to come in for the treatment at a wide variety of times, increasing the prospect for a larger subject pool. Another benefit of this approach was that it required little time or disruption to the instructors in the content area, while offering their students a desirable adjunct for improved performance. In addition, the use of cassette tapes for delivery insured a standard, replicable treatment.

In terms of effectiveness, it was hoped that the tape format would hold the subjects' attention better than printed material alone. The

subjects needed to be active and alert as they were not aware of what the treatment tape would ask them to do next (plan the week, set up reinforcers, record on graphs, and similar tasks). The tape format was designed to insure student involvement in the treatment. Unlike written directions or handouts that could be skimmed in a superficial manner, the tape format required active participation.

Assumptions of the Research

The assumptions underlying this research were that subjects would realize higher academic achievement if they spent more time on task and studied in a more efficient manner. The treatment was developed to help students focus their attention on the learning task and become more active participants in the learning process. In seeking to address the issues of time on task and study efficiency, the treatment presented self-management and study skills techniques. The self-management techniques included goal setting, self-monitoring of time use, analysis of the setting events related to study, and planning. Self-reinforcement was presented as a means of increasing time on task and establishing new study strategies. A formal behavioral contract which asked the students to specify new study methods and self-administered reinforcement was included. The study skills techniques dealt with the benefits of breaking down assignments to manageable components, distributing study sessions, and the use of systematic review. Specific study strategies were modeled, and certain principles of learning, remembering, and forgetting were presented.

It was also assumed that students volunteering for such a program would possess sufficient motivation to implement suggestions included in the treatment. Clearly, in research of the present nature, voluntary

subjects can not be required to complete assignments or comply with directions. It was hoped, therefore, that the methods presented in the treatement would be viewed as worthwhile and put into use by the students.

Theoretical Basis

Although elements of the treatment were derived from many sources, the theoretical orientation of the treatment was primarily indebted to a behavioral management approach to counseling as represented by the work of Goldfried & Merbaum (1973) Kanfer & Phillips (1970), Mahoney (1974) and Watson & Tharp (1972).

According to Mahoney (1974), a behavioral management approach to change focuses on two sets of environmental influences: those that precede a behavior and those that follow it. The events that precede a behavior can be manipulated to increase the likelihood of the desired behavior taking place. When the desired behavior has taken place, applying rewards is thought to increase the likelihood of a recurrence of the rewarded behavior. If a desired behavior does not occur so that it can be rewarded, it must be established. One of the most popular techniques for establishing a new behavior is to "shape" the behavior, by reinforcing responses that are successively closer to the desired behavior. Other means of establishing a new behavior are instruction, modeling, and guided participation. The frequency of an acquired behavior is usually increased by systematic reinforcement. Reinforcement can be made contingent on exhibiting the desired behavior; punishment can be used to decrease the frequency of an unwanted behavior.

Students can use behavioral management techniques to increase time spent in study. Self-observation provides students with feedback concerning their actual study behavior. Recording time spent in study may

in itself increase study time; careful recording may provide information regarding how study behavior is effected by environmental factors. Study time and efficiency may increase if the environment is made more conducive to studying. Study time may increase also if students systematically reinforce their study behavior. Study behavior can be reinforced by self-administered external or internal rewards. External rewards can take the form of tangible objects, like ice cream; internal rewards can take the form of self-praise or the use of pleasant mental images.

Many of these behavioral approaches were included in the present treatment. The subjects were asked to consider environmental factors and make an attempt to alter their study setting in an effort to increase study time and efficiency. Subjects were asked to chart their study time and later to plan specific times for study. Instruction, guided participation, and study skills models were used in the treatment program. Subjects were asked to identify rewards and apply systematic reinforcement in their study routines. The use of mental images as an alternative to tangible rewards was presented. Finally, subjects were asked to specify study strategies and self-administered rewards in a formal behavioral contract.

Students' success in using these methods can also be viewed from a cognitive/behavioral perspective. Bandura (1982) suggests that motivation is sustained by adopting attainable sub-goals that lead to larger goals. In terms of the present treatment, students were encouraged to set short-term study goals and monitor short-term progress. Bandura indicates that sub-goal attainment provides a clear marker of progress which verified a growing sense of "self-efficacy." By "self-efficacy"

Bandura means people's sense of being able to regulate events in their own lives.

Bandura indicates that gaining knowledge and skills which fulfill personal standards will increase self-efficacy and interest in improvement. The treatment provided students with specific study skills and a method of improving academic performance. It was hoped that the students' self-confidence and expectation of success would be enhanced by this process.

Bandura reports that research has shown that behavioral change corresponds closely to the level of self-efficacy change, regardless of the method by which self-efficacy is enhanced. He suggests that self-perceived learning efficacy affects how much time and effort a student will invest in a learning activity. Additional time and effort in learning activities by a student may lead to greater performance mastery. According to Bandura, performance mastery can, in turn, increase self-efficacy in a mutually enhancing process. From this perspective, the subjects' commitment to improvement, and sense of accomplishment at intermediate steps may have as much to contribute to treatment outcomes as the use of reinforcement or other behavioral techniques.

Organization of the Study

The remainder of this study consists of four chapters and several appendices. A review of the related literature is provided in Chapter II. Chapter III contains a description of the methods and procedures employed in this study. Results of the intervention package are

presented in Chapter IV. Chapter V includes a summary, conclusions and discussion, as well as the implications and recommendations for further research.

Definition of Terms

Baseline Assessment: Refers to the initial appraisal of a target behavior.

Contingency: Refers to a behavioral condition under which a reinforcer or punisher is administered.

Covert Reinforcement: Refers to the use of personal thoughts and feelings, not evident to an outside observer, as reinforcers.

Imagery: Refers to the use of mental images in conjunction with covert strategies such as covert reinforcement.

Positive Reinforcer: Refers to any stimulus that strengthens (maintains or increases) the behavior it follows.

Self-Reward: Refers to administering a reward to oneself. Typically, the individual also controls the requirement of the reward.

SQ3R: Refers to the study technique which requires students first to survey the text chapter by reading headings and topics. On the basis of the survey the students are asked to develop questions. Then they read the material with an eye toward answering these questions. After reading, students are encouraged to close the book and recite what has been read. Finally, they open the book and review the material.

Target Behavior: Refers to the behavior an individual aspires to alter with a behavior management plan.

Treatment Period: Refers to the phase of a self-management project in which one applies a strategy to change a behavior. This phase is usually preceded by a baseline assessment of the behavior.

(Definitions from Williams & Long, 1979)

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this literature review is to familiarize the reader with the current state of knowledge regarding study improvement and self-management research. It attempts to identify those factors associated with successful interventions and notes the methodology of the more successful studies. As few of the older studies apply behavioral approaches to study skills, this review emphasizes more recent research.

This review covers seven areas. The first is a general survey of time management within a study skills context, including treatments associated with improved academic performance. The second section provides background knowledge important for an understanding of self-control procedures. The third section reviews the literature dealing with self-control research. The fourth section provides information describing SQ3R. The fifth section relates the research on SQ3R. The sixth section reports the research using behavioral techniques in experimental interventions designed to improve college students' academic performance. The seventh section discusses the use of audio cassettes as learning devices. A summary is included.

Time Management in a Study Skills Context

Kirby (1977) has reviewed the literature on time management within a study skills context. He points out that literature in this area is relatively rare and includes articles written as early as the mid-1920's.

His review indicates that students do often mention the management of their study schedules as a source of difficulty, and most study skills manuals contain a chapter on this topic. Some interesting findings indicate that students do not spend two hours in study for each hour of class time (Marwardt & Sikkink, 1970; Sturtevant & Strang, 1927). The ratio of one hour of study to each hour of class time seems more accurate. The greatest amount of studying occurs on Tuesday and the least on Friday (Bell, 1931). Students may work in cycles of enthusiasm for a few days and then avoid study completely (Maddox, 1963). The experience of this researcher bears out the finding of Mawhinney (1971) that the frequency of tests is a key determiner of study behavior. The implication seems to be that, if college instructors want students to study on a regular basis, they need to test on a regular basis, rather than rely on two or three major exams during the semester.

Kirby reports that the results of the research on amount of study time and academic achievement are mixed, with a trend toward small positive correlations. Reviews of the research on study skills courses indicate that these courses are often followed by a minor improvement in grade point averages. In his own study, Kirby was not able to demonstrate that instruction in time management resulted in college students significantly altering their study behaviors.

Bednar & Weinberg (1970) reviewed twenty-three studies that evaluated the effectiveness of various treatment programs for under-achieving college students. Some of the treatments contained time management components. All of the studies used grade-point average as the dependent variable, and a specific treatment program intended to improve student academic performance as the independent variable. The

results showed that the treatment programs associated with improved student academic performance:

1. Were structured, rather than unstructured.
2. Were of long duration, rather than brief.
3. Contained counseling aimed at the dynamics of underachievement.
4. Showed high levels of therapeutic conditions (empathy, warmth, genuineness).

None of the above studies included use of the newer behavioral approaches, such as contingency contracting and systematic use of self-reinforcement to realize desired behavioral change. Recent successes in using these techniques with weight control, smoking and alcohol problems (Cautela, 1966; Mahoney, 1974) have led many current researchers to adapt these methods when approaching the problem of study improvement (Anthony, 1974; Greiner, 1975; Groveman, 1976; Jackson & Van Zoost, 1972; and Richards, 1974).

Self-Management

Williams & Long (1979) state that the desire for change is a "necessary but not an exclusive ingredient for self-control" (p. 4). A fundamental theme of their book, Toward a Self-Managed Life Style is that people can alter their behavior by altering their environment. The model of self-control that they present consists of the following steps:

1. Selecting the Goal. The authors suggest that the goal be stated in terms that are measurable, that the level of the goal be realistic, and preferably stated in positive terms.
2. Monitoring Target Behavior. Williams & Long point to the importance of recording the frequency of the target behavior,

starting with a baseline assessment (see terms). They indicate that behaviors are linked together in "behavioral chains," and accurate recording can disclose which events may precipitate certain behaviors. The use of graphs is recommended to evaluate the effect of specific behavioral treatments. Research is cited (Johnson & White, 1971; Kanfer & Phillips, 1970; Mahoney, 1974) that shows the mere act of recording and graphing a behavior frequently leads to improvement in that behavior.

3. Changing Setting Events. Williams & Long feel that most behaviors are triggered by certain situations or certain events within these situations. They suggest altering troublesome situations, limiting precipitating stimuli that interfere with the behavior, and eliminating reinforcers that contribute to an unwanted behavior.

4. Establishing Effective Consequences. These authors believe that most behaviors are governed by their consequences. Identifying reinforcers and using them systematically to increase desired behaviors are recommended. Recording behaviors and rearranging setting events are considered fundamental to success with self-management. The authors stress the need for immediate and direct reinforcement and indicate that aversive consequences should be applied with caution. They advocate the use of imagery, such as picturing positive and negative consequences of a behavior to alter that behavior, pointing to the success of Cautela (1970) and Tooley & Pratt (1967) in using covert sensitization with smoking problems.

5. Consolidating Gains. Williams & Long feel that if the self-management project is successful, one needs to make the transition from artificial support to natural reinforcement. They recommend enlisting social support for the continuation of the behavior, while gradually reducing the frequency of extrinsic rewards.

In applying the self-management model to study behavior, Williams & Long believe that scholarly students "have accidentally or purposely established conditions that facilitate study, while others have allowed certain conditions to produce non-study behavior" (p. 161). They suggest that students interested in improving their academic performance set up realistic goals, and accurate study records will help establish a baseline. The research of Richards (1974) which shows that many students have unrealistic estimates of their study time is cited. Accurate records will indicate the conditions that are conducive to study, and identify those situations which result in unproductive study because of distractions and inability to get on task.

The use of a formal activity schedule is recommended. By designating specific times and places for study, study becomes the priority. Williams & Long cite the research of Beneke & Harris, (1972) and Fox (1962). It indicates that by associating a particular setting with study behavior, students can increase dramatically the probability that they will study when in that setting. Williams & Long suggest setting up reinforcement schedules based on completion of required study. They feel that most students who are getting low grades will increase their performance by increasing time on task. Like so many others, these authors recommend that SQ3R be used to improve performance.

In regard to time management, Williams & Long point to the tendency of many students to fail to get up on time when they are away from home. They recommend some contingencies to deal with this problem. As far as scheduling is concerned, the work of Tennov (1977) is cited which indicates that each person has rather consistent daily energy cycles. The suggestion is made that students observe themselves to identify levels of low or peak energy. The observer can then match task assignment to energy level. For example, studying should be done when energy level is high, and cleaning and chores not requiring much concentration should be assigned to less productive times.

Self-Control

There has been considerable interest in the use of self-control techniques in therapy in the last decade (Goldfried & Merbaum, 1973; Kanfer & Phillips, 1970; Thoresen & Mahoney, 1974; Watson & Tharp, 1972). Kahn (1976) points out that self-management is not a new idea by any means and that it might be traced back to the Socratic dictum, Know Thyself. He operationally defines self-management as the systematic application of principles of behavior to direct a change in one's own behavior. Kahn adds that these principles of behavior have been rigorously formulated under experimental procedures and have withstood the critical test of empirical validation (Bandura, 1969; Tharp, 1969). Kahn describes the components of self-management as:

a) Self-monitoring, the systematic process of observing one's own behavior. He offers the illustration of a student who might systematically analyze his or her study regimen to determine which study behaviors are deficient and which non-studying behaviors are excessively distracting.

b) Self-measurement, assessing the actual extent of the problem behavior in a variety of different ways such as counting the number cigarettes smoked, or recording the actual time spent in study and activities that compete with study.

c) Self-mediation, the development and implementation of a strategy to change the self-selected behavior, such as manipulating the environmental factors influencing the behavior, and arranging consequences.

d) Self-maintenance, the incorporation of the new behavior into permanent routines.

Similarly, Richards (1974) describes self-control as a person making a response to modify the probability of another one of his own responses. The person serves as his own behavior change agent. Richards indicates that Kanfer (1970) has used self-control to denote only instances of restraint or self-mediated response suppression, whereas Cautela (1969) has used it to cover all instances of self-imposed behavior modification. Skinner (1953) emphasizes external influences on self-control response, but Goldfried & Merbaum (1973) in their definition of self-control focus on conscious, personal choice and individual initiation of controlling responses. Kanfer & Karoly (1972) emphasize the importance of utterance and intention statements, indicating that statements of behavioral intentions like New Year's resolutions are verbal operants subject to the general laws of conditioning. In summary, self-control is when "the person learns to be his own teacher, therapist, or behavior influencer" (Krasner & Ullman, 1973, p. 309). Mahoney (1974) provides extensive coverage of self-control issues and research in Self-Control: Power To The Person.

SQ3R

The literature on SQ3R is reviewed because this study technique is so frequently recommended in "how to study" publications. Also, this topic is included since the proposed treatment contains components similar to SQ3R. The discussion illustrates some of the difficulties students may have in implementing study advice.

Spache (1968) indicates that Robinson's (1961) SQ3R study method is one of the most widely taught study skills methods and he regards it as an excellent study technique. As commonly taught in its original or in various other versions, the method involves these steps:

1. Survey--Survey the material by reading headings, topic and summary sentences and, perhaps, the introductory and summary paragraphs.
2. Question--Questions to guide the careful reading are structured by the teacher or by the student as a result of the surveying. Questions may also be formulated from the headings or main ideas. Thus the reading is planned in terms of specific purposes, such as answering the questions or recognizing the organization. At this time, the student also makes tentative plans in terms of the speed and degree of attention to detail with which he or she will read.
3. Read--The material is now read thoroughly and carefully in a manner intended to accomplish the purposes outlined previously.
4. Recite--A self-recitation is undertaken to determine the pupils' ability to recall the content of the material and to answer the questions they have proposed to themselves.
5. Review--As a result of the self-recitation, students know which section of the material they should review for more thorough understanding or recall.

Spache notes that this method is particularly valuable for students who cannot absorb large amounts of material easily or cannot memorize readily. He points out that this study technique is a combination of reading and study practices with a sound research foundation. He indicates that many studies prove that each component--preliminary surveying, planning pre-reading questions, and self-recitation add to the reader's comprehension efficiency. Also, immediate review tends to promote retention and retard forgetting. Spache suggests that each of these steps should be taught, practiced and gradually combined into the complete act of intensive reading. He comments that the greatest comprehension and retention are achieved only when all the steps are accepted and used regularly by the student. He states that the method is superior to reading and rereading, to reading and underlining, or to many other versions of the study act that students evolve by trial and error.

Writing more recently, Tadlock (1978) attempts to explain why SQ3R works, based on an information processing theory of learning. She points out that if students believed that SQ3R would work, they would be more inclined to use it. She believes that SQ3R is based on the information processing theory of learning, citing Hunt (1971), Neisser (1967), and Newell & Simon (1972). She suggests that, to make sense of the world, learners:

1. take in information through their sensory organs.
2. process that information via their memory system.
3. structure and categorize the information in the most meaningful manner possible.
4. store the information so it will be available for recall and future use.

This author suggests that each component of SQ3R is designed to facilitate the processing of incoming information so the reader can deal with more of it and deal with it more effectively. She interprets the SQ3R process in the following manner:

Survey: Prepares the processing system for what is coming. The system can be more efficient if it knows what is coming.

Questions: Requires the students to specify what they do not know. Self-generated questions are more valuable than teacher generated ones.

Read: Readers need to fill in the gaps in their cognitive structure. Active involvement is necessary to receive maximum information.

Recite: If students skip this time consuming component, the system will not work. Maximum concentration will be placed on the most relevant information, if the students read with reciting in mind. Reciting helps transfer information from short-term memory to long term-memory.

Review: Most forgetting takes place shortly after the learning task is finished. Immediate review counteracts this forgetting.

SQ3R Research

In their recent review of the literature on SQ3R, Johns & McNamara (1980) indicate that neither Francis P. Robinson, the originator of this method, nor subsequent writers have presented thorough empirical evidence that SQ3R is more effective than many other study methods in use. They report that Robinson gives neither details of his own research nor empirical evidence to support this method. They conclude that "Robinson's case for SQ3R lies more in opinion than in research" (p. 706).

These authors state that a review of the literature on SQ3R "indicates an abundance of opinions in favor of SQ3R that have little evidence to back them up" (p. 706). They cite Spache (1968) as an example of a writer proclaiming its use and modifying its form without benefit of research. They note that Epstein (1968), Fay (1965), Pauk (1974), and Wilcox (1958) all recommend modified versions of SQ3R without producing experimental research to support their positions.

Johns & McNamara report that the experimental research using SQ3R conducted by Diggs (1973), Donald (1967), and Gurrola (1975) failed to show significant effects. A study by Willmore (1966) reported underlining was a slightly better method than SQ3R.

Johns & McNamara conclude that very little controlled research has been conducted using SQ3R. They suggest that more studies should be done to determine if SQ3R is truly a superior reading/study technique. They recommend that objective, reliable tests should serve as the primary assessment instruments to determine the effectiveness of SQ3R. In fairness to Robinson's method it should be pointed out that all of the experimental research cited in this article was conducted by researchers completing doctoral dissertations. Since it is unusual for presumably inexperienced researchers to establish significant findings, especially in a field setting, their failure to report significant treatment effects does not necessarily discredit SQ3R.

Wooster (1953) conducted one of the major research projects on SQ3R as part of a dissertation project at Ohio State University. He reports that his attempt was one of the first to evaluate the specific techniques of SQ3R, rather than the effect of study courses in general. In this research students were introduced to SQ3R and practiced it in a laboratory

setting throughout a quarter. He reports the following findings:

1. The reading rate at the end of the period of practice was not significantly greater than the rate at the beginning.
2. Comprehension, as tested, remained fairly steady.
3. The quality of classnotes showed great improvement.
4. Most of the group seemed to be doing the survey step.
5. About two-thirds of the group continued to turn headings into questions at least some of the time.
6. Students continued to take their notes as they read rather than in the desired manner--from memory after reading a short selection. No group members indicated they were using the desired procedure consistently.
7. By the end of the period, a few of the group seemed to be trying to review at least partly by recitation. For the most part, it appeared that the review step was being done in a perfunctory manner, if at all.

Wooster comments that the results were not satisfactory. Students could tell what SQ3R is and write an adequate description of all the steps involved. Yet, none of the students seemed to learn to use the SQ3R method as a integrated technique. Wooster concludes that the students were not at a stage of readiness for learning such a technique.

What emerges from the review of the literature on SQ3R is agreement by most study skills experts that it seems like a good method for study. The problem may revolve around getting students to use the method. First, there is the issue of motivation. If students are satisfied with their present methods, it seems unlikely they will have an interest in adopting new techniques. Second, those who recommend this method may

have underestimated how difficult it is to modify well established behaviors. College students may have been studying "their way" for a decade or more. It may be naive to assume that simple exposure to a new method, even with students who wish to change their study habits, will result in implementation of SQ3R. Failure of subjects to utilize this method may be a primary cause for insignificant research findings to support SQ3R.

Experimental Interventions

Jackson & Van Zoost (1972) point out that attempts to improve study behaviors have ranged from conversational counseling (Sheldon & Landsman, 1950) to the application of learning principles (Fox, 1962; Jones, 1969; Ryan, 1967) to instruction in study skills (Ritter, 1971). In their own research, forty-seven university freshmen were randomly assigned to two reinforcement conditions, self-administered reinforcement and external reinforcement, and two control groups, no reinforcement and no treatment. All treatment subjects viewed identical videotaped presentations on study skills, but the experimental groups varied in the way in which they could earn back a $10 deposit. For both self-administered and external reinforcement conditions, a significant gain in study habits was found that was maintained over a 4-month follow-up. The study was repeated with 35 students who included upperclassmen assigned to the two treatment groups mentioned above. All subjects showed significant increases in study habits. However, no condition produced a gain in academic performance beyond chance. Perhaps, grade point average was too global an outcome measure. If students' efforts were focused and these techniques were applied to a specific class, significant findings might have resulted.

Anthony (1974) conducted two experiments to assess the possible value of various components of behavioral self-control programs for study improvement. Sixty college students were randomly assigned to four groups. Group I self-recorded study behaviors with training in behavioral self-management procedures given midway through the semester. Group II self-recorded an unrelated behavior and received the same treatment package as group one midway through the semester. Group III self-recorded study behavior only, and Group IV recorded an external behavior. Only a moderate degree of relationship was found between self-recorded study time and exam scores, although this relationship was far greater than was found for groups that monitored other behaviors. Further analysis revealed no significant differences among groups in academic performance as measured by successive exam scores or increments in cumulative grade point averages.

The second experiment attempted to assess the different components of the treatment package presented in the first study. Forty college students were randomly assigned to three groups. Group I self-monitored study behavior and received instructions in stimulus control procedures in the middle of the semester. Group II also self-monitored study behavior and received instruction in contingency management (see terms) procedures in the middle of the semester. Group III self-monitored their study behavior without receiving instruction. Correlations between self-recorded study behavior and exam scores were somewhat greater than found in the first experiment. Further analysis indicated no significant differences among groups in academic performance, replicating the results of the first experiment. Earlier intervention and better study techniques might have improved this treatment.

Groveman (1976) conducted a similar study with college students who expressed a desire to improve their academic performance. Subjects were randomly assigned to one of six groups: a) a study skills counseling group, b) a lengthened study skills counseling group, c) a behavioral self-control group, d) a study skills counseling behavioral self-control group, e) an attention-placebo control group, f) a no-treatment control group. The groups met for approximately two hours per week over a four week period. The two major outcome measures used in this study were pre-treatment to post-treatment GPA and Survey of Study Habits and Attitudes (SSHA) change scores. Analysis of variance results indicated that there were no significant differences in grade point average change among the treatment and control groups. T-test results indicated that significant differences in grade point average change did occur between the behavioral self-control and study skills counseling group and between the lengthened study skills counseling and no-treatment control groups. The behavioral self-control group achieved higher grade point average gains than did any other treatment or control groups. While an overall treatment effect was noted on the SSHA, no significant difference across the specific treatment groups occurred. The study skills counseling behavioral self-control group, however, consistently achieved higher positive gains on the SSHA than did other treatment groups. Again, in this study grade point average may have been too global an outcome measure. The combination of study skills and behavioral self-control indicates a direction to be followed.

Greiner (1975) reported the results of this research at the University of Cincinnati that he conducted under the supervision of Paul Karoly. The research was designed to assess the comparative utility of the component

procedures of Kanfer & Karoly's (1972) model of self-control, which includes the interdependent processes of self-monitoring, self-evaluation, and self-reward, as applied to a study skills training program. The major focus of this experiment was to determine the usefulness of training subjects to use plans as a part of the self-evaluation process in the self-control sequence.

Ninety six students who were having difficulty with introductory psychology were selected as subjects and assigned to six groups with sixteen subjects in each group. The groups did not differ prior to training on grade point average, motivation to change, study habits, and the first psychology quiz score of the quarter. One group served as a no treatment control group and filled out questionnaires at the beginning and end of the experiment. The remaining five groups received various amounts of training in study skills and self-control techniques in an add-on design. Group I acted as an information control group and received training in study methods, but not self-control techniques. Group II served as an expectancy control group. These subjects were given the same training as Group I but also were given a strong expectancy or set that the program would result in better academic performance. Group III was given the same training as Group II, plus training in self-monitoring techniques. Group IV received all prior treatments plus a self-reward strategy. Group V received all prior treatments plus self-planning strategies. All subjects in the treatment groups were asked to use the study program in which they had received training. This involved making outlines and the use of workbooks by all subjects; the subjects in the self-control groups (Groups III, IV, and V) were also asked to keep records of their self-control activities.

It was predicted that the self-control trained groups would work more with their study programs than would the groups which received training in study skills alone. Groups that received self-control training completed significantly more of their workbooks and outlines than did other groups. Analysis of the relative efficacy of the self-control technique indicated that the group that used planning strategies performed significantly better on these same measures than all other groups.

Pre- and post-treatment change on psychology exam performance, study habits and attitudes and GPA were analyzed for all groups. While the groups did not differ on these measures prior to treatment, the data indicated that, in general, the groups differed after the program was completed. The group using planning strategies performed significantly better on outcome measures than all of the other groups. Greiner states that the data clearly and consistently supported the prediction that the subjects who received self-control training in planning in addition to study skills training would perform better than subjects who learned only study skills. The data failed to indicate clear-cut effects as a result of training in self-monitoring and/or self-reward strategies. Training in self-monitoring did not have significant effect on study activity.

This research further indicates the value of combining self-management approaches with study skills techniques. It is not surprising that slight variations in treatment showed little difference in outcome. It is noteworthy that course exam scores, rather than grade point average, were used as the main outcome measures.

One of the most carefully designed studies of college students' study behavior using "self-control" techniques was developed by Richards (1974).

This experiment investigated the efficacy of several self-control techniques for modifying college students' study behavior. A two-factor, between subjects treatment design was used. Ninety volunteer subjects taking the same course were blocked on the basis of mid-term exam scores and then randomly assigned to treatment groups. A matched No-Contact Control group contained another eighteen students in the same course. Treatment groups were (1) Self-Rewarding (SR) + Stimulus Control (SC) + General Advice (GA), (2) SR + GA, (3) SC + GA, (4) GA, and (5) No Treatment Control (NTC) group. Treatments were delivered via typed handouts which subjects read and then took home. There were four sessions over the period of five weeks and the contact between the experimenter and the subjects was minimal. The dependent measures were (a) experimenter devised multiple choice test, (b) course final exam, (c) course final grade, (d) a questionnaire in which the subjects evaluated the experiment, and (e) the data provided by the subjects regarding their use of self-reward.

It was predicted that the condition of self-reward would be most efficacious, and general study advice would be superior to no treatment. It was also predicted that stimulus control would add little to the effectiveness of self-rewarding or general advice, and that the control groups would be equivalent. Richards reports that the results supported these predictions consistently across the different dependent measures, especially the superiority of self-reward.

This study also supports the use of self-management approaches with study skills techniques to improve academic performance. Even stronger findings might have resulted if the study skill component was enlarged and delivered in a more effective manner. The dittoed handouts that

provided the study skill component of the treatment may not have been read by every student, or only read in a superficial manner.

Audio Cassettes

As the proposed treatment for this study is presented on audio cassette tapes and the subjects are asked to construct their own cassette "learning tape," a brief description of the literature on the use of audio cassettes as learning aids is provided.

Kozma (1978) points out that battery operated tape recorders have made audio one of the most versatile of available media. He suggests that sound recording can be used in automobiles, on commuter trains, at home, or in any convenient location where the student has access to a recorder. He notes that the recorders permit students to start, stop, and go over audio material. He indicates that this control has been shown to be an important element in the student's affective reaction to the materials. He feels that this student control results in more positive response and more learning than live telelectures and radio broadcasts. He indicates that audio recordings can be especially helpful to students with low reading proficiencies.

Langdon (1978) notes in the Audio Workbook that due to the wide availability of cassette recorder units, instructional designs involving the audiotape medium are no longer exotic or out of reach. He feels that home developed and produced recordings can provide students with effective audio instruction where and when they are needed. He suggests that "part of the beauty" of audio is the ease with which the listener can stop and replay the message, much the same way as one can with the written medium" (p. 4). In demonstrating the construction of an Audio-Workbook learning system, he calls student interaction the basic

requirement. He indicates that "the principal need is to provide an opportunity for the student to demonstrate to himself or herself whether or not he or she is learning" (p. 9).

Neither of these sources, nor the articles cited in their bibliographies mentions a concept similar to a student constructed learning tape, one component of the treatment package of the present research. A search of the Psychological Abstracts, Dissertations Abstracts, ERIC, and reviews of Instructional Psychology in the Annual Review of Psychology (1977, 1981) has failed to find mention of this type of study-help procedure. While the construction of learning tapes to help a student master content is not a unique idea, it appears that little or nothing has been written about it.

Summary of the Literature

A review of the literature shows that there has been modest interest over the years in helping students develop more effective study behaviors. But often the approaches to helping students are based on recommendations that lack empirical validation. Some of the more recent studies have combined behavioral management approaches with study skills techniques and, generally speaking, the more recent studies show greater concern for research methodology. However, several recent researchers may have emphasized the behavioral techniques, at the expense of study techniques. Several researchers have relied solely on study skills handouts as the content for study improvement. It remains questionable how many students actually read such handouts. As we know that long established behaviors such as study resist change, it may be somewhat naive to expect students to alter their method of study simply on the basis of handouts. Several of these studies have included SQ3R as part of the study

treatment, without attending to the difficulties of implementation described by Wooster (1953) and others. Finally, the literature offers little on the topic of student constructed learning materials such as "learning tapes." The present research provides an opportunity to share a new combination of techniques with those counselors engaged in work with learning skills.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine the effectiveness of a "learning acceleration" tape treatment program in helping students achieve higher grades in Introductory Psychology classes. The treatment consisted of self-management and study skills techniques that were presented to students via cassette tape recordings once a week during five weekly sessions prior to the students' final examinations. A complete transcript of the treatment tapes and related materials is provided in Appendices A and B. The self-management techniques included goal setting, self-monitoring, self-reinforcement, planning, and the construction of a formal behavioral contract. The study skills techniques presented certain principles of learning, forgetting, and remembering; several specific study strategies were modeled, and the benefits of systematic study and review were emphasized.

Subjects for the experiment consisted of 88 student volunteers enrolled in Introductory Psychology classes during the fall semester of 1982 at the University of North Carolina at Wilmington (UNCW).

Subjects were randomly assigned to either the treatment or the control group. The experimental group consisted of 40 subjects who had completed treatment. The control group consisted of 48 subjects who neither met nor received treatment. The experimental group initially included 66 subjects, but 26 of these subjects dropped out of the study before treatment was completed. Table 1 (see below) shows the attendance

for each of the five treatment sessions. Table 2 (see below) describes the sample in terms of sex, race, age, and Scholastic Aptitude Test (SAT) scores.

Experimental subjects were scheduled into small groups (4 to 12 students) which met in a classroom located in the Counseling and Testing Center at UNCW for five, weekly, 30 minute sessions prior to the students' final examinations. During these sessions the subjects listened to the treatment tapes, received study skills handouts, and completed self-management charts and planning exercises related to study in Psychology 105.

The independent variable in this study was the "learning acceleration" tape treatment program and the dependent variables were the students' score on the final examination and course grade in Psychology 105, and a post-treatment assessment of study habits and attitudes as measured by the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA). Information regarding the subjects' perception of the treatment was gathered by the use of a self-report instrument, the "Subjects' Evaluation of the Experiment" questionnaire.

Research Design

A randomized control-group post-test only design was used to test the hypotheses. The independent variable was the "learning acceleration" tape treatment program. The dependent variables were the subjects' final examination scores and course grade in Psychology 105 and scores on the post-treatment administration of the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA). This design was chosen as the most appropriate to the nature of the research and can be represented as a variation of "Design 4" (Issac & Michael, 1971) in the following manner:

	Pre-test	Treatment	Post-test
Experimental Group (R)*		X	T_2 T_3 T_4
Control Group (R)			T_2 T_3 T_4

*Random Assignment

X = Treatment ("Learning Acceleration" Tape Treatment Program)
T_2 = Final Examination Scores in Psychology 105
T_3 = Course Grade Scores in Psychology 105
T_4 = Post-treatment ISHA Scores

Issac & Michael (1971) note that a pre-test is unnecessary in this type of design as randomization should control for initial differences between subjects in the experimental group and subjects in the control group.

Hypotheses

The following hypotheses were derived from the research questions stated in Chapter I. The experimental group refers to subjects randomly assigned to receive the "learning acceleration" tape treatment. The control group refers to those subjects randomly assigned to receive no treatment. The hypotheses are stated in null form:

Hypothesis 1:
As a result of participation in the "learning acceleration" tape treatment program there will be no difference in the final examination scores in Psychology 105 between subjects in the experimental group and subjects in the control group.

Hypothesis 2:
As a result of participation in the "learning acceleration" tape treatment program there will be no difference in course grade scores in Psychology 105 between subjects in the experimental group and subjects in the control group.

Hypothesis 3:

As a result of participation in the "learning acceleration" tape treatment program there will be no difference in study habits and attitudes as measured by scores on the Inventory of Study Habits and Attitudes between subjects in the experimental group and subjects in the control group.

Pilot Study

A pilot study was conducted during the second summer session of 1982 with student volunteers from an Introductory Psychology class at UNCW. The pilot treatment consisted of a shortened form of the "learning acceleration" tape treatment program used in the main study. Treatment in the pilot study consisted of four sessions, spaced at weekly intervals, in which students listened to an audio-cassette recording of study improvement suggestions. Also, subjects completed charts and graphs similar to those used later in the main study. Sixteen subjects completed treatment.

The objective of the pilot study was to field test the treatment materials and obtain feedback to improve the main study. No control group was formed in the pilot study, but subjects who participated in the treatment were compared to non-participants in the same class. Subjects who participated in the treatment had final examination scores and course grades in Psychology 105 that were significantly higher than non-participants. Also, subjects who participated in the treatment showed a significant increase in study habits and attitudes as measured by the ISHA. A complete description of the pilot study is provided in Appendix C.

Selection of Subjects

The researcher made arrangements with three psychology instructors to enter their classes and ask for volunteers interested in working to improve their course grade in Introductory Psychology. Students enrolled in six sections of Psychology 105 during the 1982 fall semester at the University of North Carolina at Wilmington (UNCW) were approached soon after their midterm examination. Motivation for students to participate consisted of a desire for a better grade in the course, and each experimental subject received one experimental credit for attending the first two treatment sessions. Six sections of Psychology 105 represented a pool of about 240 students. One hundred and forty-four students volunteered for treatment.

Randomization for treatment was accomplished as described below. The student's name and preferred treatment time were listed on an index card for each of the 144 students who indicated that they would like to participate in the study. Most students indicated a fairly wide range of available times. The cards were thoroughly shuffled and reshuffled to ensure random order. Sixteen half-hour time slots were designated by the researcher as treatment periods on Mondays and Tuesdays. Treatment session groups would be made up of four to twelve subjects. The researcher then randomly assigned the first card to the first available group for which there was no time conflict, and proceeded to assign the next 95 cards in the same manner. Those 48 cards remaining comprised the control group. The control group neither met, nor received treatment.

Of the 96 students originally assigned to treatment, 66 subjects attended their first treatment session and 40 completed treatment (all five sessions). Table 1 shows the attendance for each of the five

treatment sessions. The 40 experimental subjects who completed treatment comprised the experimental group utilized in the data analysis; the control group included 48 subjects. Table 2 provides a description of these 88 subjects in terms of sex, age, race and Scholastic Aptitude Test (SAT) scores. Since the control group was formed from the original group of volunteers, it was assumed that because of random assignment they possessed the same motivational factors and ability level as members of the experimental group.

Informal surveys by the Psychology department have shown that students enrolled in Psychology 105 represent a good cross section of the student body; therefore, the findings of this study may generalize to the UNCW student population. Generalizations of the findings to students in other colleges should be approached with caution. A brief description of the UNCW student population is provided below.

UNCW is a small branch of the North Carolina State University System with a student population of approximately 5,000 students, 1,400 of whom live on campus. The most recent available survey (American Council on Education, 1977) indicates that the UNCW student population is comprised of relatively few out-of-state students or students who are members of a racial minority. The estimated level of parental income and education for the UNCW student population is slightly above the level of the national norms in this survey. Concerning the religious preferences of students, nearly 40 percent of the student population identified themselves as Baptists, and nearly 20 percent of students identified themselves as Methodists. The proportion of Baptists and Methodists in the UNCW population is substantially greater than the level of

TABLE 1

Summary Table of Students' Attendance
at Treatment Sessions

Treatment Session	Students Attending Treatment Session
1	66
2	60
3	56
4	42
5	40

TABLE 2

Summary Table of Subjects' Characteristics

Characteristics		Number of Students (Total n = 88, 48 controls; 40 subjects finishing treatment)
(1) Sex:	Male	34
	Female	54
(2) Age:	18-19	67
	20-21	13
	22-23	2
	24-25	3
	26 or over	3
(3) Race:	White	81
	Black	6
	Other	1
(4) SAT Scores (Combined Verbal & Math)		
	391-490	1
	491-590	1
	591-690	6
	691-790	20
	791-890	36
	891-990	15
	991-1090	6
	1091-1190	3

the national norms in this survey. Mean scores on the Scholastic Aptitude Test (SAT) for UNCW students are in the 40 percentile range when compared to the national norms for students in a four year college program.

Procedures

The procedures followed by the researcher in conducting the present study are described in detail on a chronological basis.

1. The researcher submitted a project description to the Committee on the Protection of Human Subjects at the University of North Carolina at Wilmington (UNCW) and received approval to conduct the study.

2. The researcher made arrangements for the study with three psychology instructors who allowed the researcher to enter their six sections of Introductory Psychology to recruit subjects, distribute appointment slips and administer a study skills inventory. These instructors agreed to provide the midterm, final examination, and course grades for students who consented to release this information. Each instructor taught two sections of Introductory Psychology.

All three instructors involved in the study were teachers with many years of experience teaching Introductory Psychology. These instructors all used the seventh edition of Introductory Psychology (Hilgard, Atkinson & Atkinson, 1979). Instructors administered their own examinations and determined their own grading policy. Random assignment of subjects was used to control for these instructor differences.

3. The researcher approached students enrolled in six sections of Introductory Psychology at the University of North Carolina at Wilmington during the eighth week of the fall semester of 1982 to solicit volunteers for a "learning acceleration" tape treatment program designed to improve

their academic performance. An "Experimental Subjects' Informed Consent and Release Form" (Appendix B, Item 1) was distributed to each student.

It was explained that volunteers would be asked to report five times during the semester (flexible hours, 30 minute sessions, each week) to listen to tapes and use other materials designed to improve performance in Introductory Psychology. Students were asked to participate only if they thought that their study habits needed improvement and they would attempt to follow the procedures. It was mentioned that experimental credit was available for participants, but that desire for a better grade in Introductory Psychology should be the primary reason for participation.

Students were informed that participation in the project was voluntary and they could withdraw at any time. The consent and release form indicated that only some of the volunteers would be chosen to receive the treatment. The researcher explained the need for a control group, and made it clear that those students assigned to the control group could still receive a similar treatment at the completion of the experiment. All students in the pool were asked to release their grades in Psychology 105, and those wishing to volunteer to participate in the project were asked to indicate the time they would prefer to come to the sessions and also give alternative times.

4. Two weeks later the researcher returned to the six sections of Psychology 105 and administered the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA) to the experimental and control subjects. At that time the researcher distributed reminder slips indicating the day and time of the treatment sessions to 96 students who had been chosen as experimental subjects. The researcher returned to the six sections of

Psychology 105 after treatment on the fifteenth week of the semester and readministered the ISHA at that time as a study skills' post-test.

5. The "learning acceleration" tape treatment sessions were scheduled into 16 half-hour blocks on Mondays and Tuesdays. Between 4 and 12 subjects were assigned to each treatment session. The location for the treatment was a classroom in the UNCW Counseling and Testing Center. When subjects arrived at the center for each session, they were given their treatment folders and directed to the classroom where the tape player was located. The treatment folders contained graphs that remained in the folder, and other treatment materials and handouts that the subjects took with them. (The treatment materials and tapes which were prepared and recorded by the researcher for use in the present study are described in the "Learning Acceleration" Tape Treatment Program below.) Five minutes after the scheduled time of the session, the researcher or the department secretary turned on the treatment tapes. This delay was to allow time for late arrivals. Subjects listened to the treatment tapes and completed materials at their desks. At the end of the treatment session, subjects returned their folders to the secretary. Subjects were entitled to an experimental credit slip for each session they attended and the secretary distributed these slips after the first and second sessions. As the instructors in Psychology 105 only required two experimental slips, none were distributed in subsequent sessions.

6. After the first session, the researcher called experimental subjects to remind them of their appointments. Experimental subjects were called by telephone, usually on the night preceding their treatment, for the second, third, fourth, and fifth sessions. The researcher also called all subjects who missed their appointments and attempted to reschedule their sessions later in the week. In these cases the subjects

listened to the treatment tapes individually and rejoined their scheduled group at the next session. Subjects who missed a session and did not make it up were considered dropouts from the experiment.

7. Since students were encouraged to make their own "learning tapes" after the fourth and fifth treatment sessions, blank cassette tapes were made available to subjects and 20 blank tapes were distributed. Students were allowed to keep these tapes. Tape recorders were also made available to any student who wanted to use one.

Instruments

The dependent variables in this study were final examination and course grade scores in Psychology 105 and post-treatment scores on the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA). The ISHA was administered to all subjects in the experimental group and in the control group before and after the treatment. This self-report instrument presents 49 yes/no items regarding the student's study habits and attitudes. The inventory consists of seven subscales: listening and note-taking, general study habits, relationships with teachers and courses, motivation, organization of effort, concentration and emotional problems. The total score from the ISHA was used to assess the "learning acceleration" tape treatment program by comparing the mean scores from the experimental group with the mean scores of the control group.

The ISHA manual reports reliability data using the Kuder-Richardson 20 formula (KR-20) based on internal consistency. A KR-20 of .87 was established for the total inventory, based on a sample of 1,787 college bound high school students, and college freshmen and sophomores. Item difficulties and additional data on this instrument are included in Appendix C. In establishing the validity of the Inventory, a panel of

test-makers developed items chosen from statements by students about their own study habits as they sought help at a reading and study skills center. The manual notes that far more items were tested in the earlier version of the inventory as it was standardized. A Tryon Phi-coefficient cluster analysis provided the empirical breakdown of these study related items into subscales. No effort has been made to correlate scores on the ISHA with criterion scores.

Finally, experimental subjects who completed treatment were asked to provide written feedback regarding their perceptions of the "learning acceleration" tape treatment program. The "Subjects' Evaluation of the Experiment" questionnaire contained ten yes/no questions concerning the treatment and asked subjects to respond to several open-ended questions as well (see Appendix B, Item 14). The instrument was designed by the researcher to obtain specific information not available from the other outcome measures.

"Learning Acceleration" Tape Treatment Program

The "learning acceleration" tape treatment program consisted of five taped sessions, spaced at weekly intervals, in which subjects listened to an audio-cassette recording and completed planning charts, graphs, and other materials that they kept in their individual folders. In addition, students were given charts to take with them to plan and record their study activity in Psychology 105. Handouts were provided in the first, third and fourth sessions (see Appendix A and B for a complete transcript and examples of the accompanying handouts). A description of the sessions follows:

Session I. Through the treatment tapes this session introduced students to the benefits of being systematic in their study routines. The concept of self-monitoring study behavior was presented, and students were asked

to examine a sample Psychology 105 Daily Study Record which was located in their folder. They were asked to notice that the student in the sample not only recorded his study time, but also rewarded himself each time he studied. The students were asked not only to keep a record of their study behavior during the week, but also to reinforce their study behavior during the week. They were asked to return the study record when they returned to their next session, so they could complete a study graph. Finally, students were presented with information on "test wiseness" and were provided a handout on that subject.

Session II. Through the treatment tapes this session introduced the benefits of planning study behavior, so that competing fun activities would not prevent the students from spending sufficient time on study related tasks. The tape script discussed the benefit of using prime time for study, and asked the students to become aware of what times they were most alert. Also, students were asked to break down assignments to smaller components as a help in getting started. Students were presented with the benefits of distributing study sessions, and the need for systematic review. Finally, time was allowed on the tape for students to set up specific study time during the week. Students were asked during the pause in the tape presentation to plan the week, keeping in mind the concepts of prime time, distributing study sessions, and breaking down tasks that had been presented. Then the students were asked to graph the amount of time spent in study during the past week on a graph form that was stapled in their folders. They were requested to continue charting their actual study time and use of rewards on a blank Psychology 105 Daily Record Sheet that they took with them.

Session III. Through the treatment tapes the third session introduced students to effective study procedures. The audio tapes emphasized that these

techniques would assist students in becoming active participants in the reading process, and increase concentration. Students were told how to preview material, and use introductory and summary material as advance organizers. It was suggested that developing questions on the text would enable them to develop an active dialogue with the author. Examples of these procedures were provided. Additionally, students were encouraged to review on a regular basis the Psychology 105 material they had already learned.

The difficulty of changing long-established study habits was addressed and the students were asked to focus their use of reinforcement on increasing the use of the new study methods presented in the treatment tapes. A handout that was to be taken home by students fully described these procedures. Finally, students were asked to process their use of time during the past week, and complete their study time graphs. Students were requested to continue charting their use of study time and self-administered rewards during the week.

Session IV. Through the treatment tapes session four began with a review of the concepts of self-monitoring, prime time, the benefits of planning, review and self-reward. Next, the tape presentation introduced the student to the benefits of constructing an audio "learning tape" as a study aid. Students were encouraged to make their own tapes as a method of preparing for the final examination in Psychology 105; blank tapes were offered to any student needing one. Twenty students asked for blank tapes and other students mentioned that they had blank tapes at home. Students were not required to make such a tape, so compliance was optional. Students were allowed to keep tapes that were borrowed.

Each step necessary for the construction of a "learning tape" useful in reviewing for the final exam in Psychology 105 was presented. Students were advised that they needed to complete readings and review course notes for Psychology 105 in the accustomed manner. When they had identified important material by underlining or reviewing chapter summaries, they would be in a position to tape this material as an aid to recall at exam time. A taped segment presented a model of what a "learning tape" might sound like, using content from Psychology 105 and the voice of a female student. Students were provided with a handout which restated the benefits of making a "learning tape" and reviewed the steps necessary for the construction of a useful tape (see Appendix B, Item 10).

Session V. Through the treatment tapes the fifth session attempted to help the students implement the techniques of the treatment for the duration of the semester. As the final examination was approaching, this final session employed the use of a formal behavioral contract to increase utilization of those techniques which the student had found helpful. This session again reviewed some of the suggestions that had been made previously. It reintroduced the benefits of creating a "learning tape" and provided another model of what such a tape might sound like, using additional material from the Psychology 105 textbook. It brought up the topic of reinforcement once more and provided a list of possible reinforcers.

Also, this session introduced the concept of using covert reinforcement (see terms), as an alternative reinforcement strategy. It discussed the use of family and friends to develop social support for target behaviors. The students were given an explanation of a formal behavioral contract and were provided with an example. Students were next asked to

complete their own behavioral contracts to govern their study for the duration of the semester with special emphasis on utilizing the "learning tape" method. Students were asked to complete an evaluation instrument (see Appendix B, Item 9) designed to elicit written feedback regarding the treatment. The evaluation form asked subjects to determine the effects the treatment had on their study time, attitude toward study, ability to learn and remember material, as well as their feeling of being in control of their study behavior. Open-ended questons were included to obtain additional feedback.

Treatment Tapes and Materials

The treatment tapes for the "learning acceleration" tape treatment program were designed and recorded by the researcher for use in this experiment. The self-management content presented on the tape was derived from Williams & Long (1979) Toward A Self-Managed Life Style. Their suggestions include planning, recording, and rewarding study behavior. In addition, Williams & Long provide model graphs similar to the ones used by the students to chart their time use in this treatment. Their approach to self-management is like those of several other authors (Kanfer & Phillips, 1970; Thoresen & Mahoney, 1974) and many of their suggestions are based on other sources (Beneke & Harris, 1972; Tennov, 1977; Tooley & Pratt, 1967).

Study suggestions contained in the treatment were derived from Pauk's (1974) How To Study In College. Such suggestions as the need to manage time, distribute study practice, and review on a regular basis were taken from this source, and are standard content in how to study type publications (Morgan & Deese, 1969; Raygor & Wark, 1970; Robinson, 1961). The "Look, Ask, Say, Replay" study method suggested in the fourth

treatment session is a method of helping students become active participants in the reading process that was designed by the researcher to be used with a tape recorder. Subjects were asked to use this method when constructing their own "learning tape."

The technique of having students construct their own "learning tape" was included in the treatment on the basis of the favorable results the researcher had seen in using this technique with individual clients. There does not seem to be any prior research which mentions use of this technique, and its inclusion in a study skills intervention appears to be unique., The handout on constructing a "learning tape" was written by the researcher for this experiment.

Another innovation in the treatment was the use of a formal behavioral contract. In the last treatment session subjects were asked to specify the study techniques and self-rewards they would use for the duraction of the semester. The contract used in this treatment was derived from a model presented by Mahoney (1974). Appendix A provides a complete transcript of the treatment tapes; Appendix B contains all the handouts, graphs, and charts that accompanied the tapes.

Analysis of the Data

An analysis of variance was performed on the data using a Statistical Package for the Social Sciences (SPSS) ONEWAY program. The scores on the final examination and course grade in Psychology 105 and the post-treatment administration of the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA) were compared between subjects in the experimental group and subjects in the control group to determine if significant differences existed on these measures. An additional analysis of variance was performed on the scores on the midterm examination in Psychology 105

and the pre-treatment scores of the ISHA between subjects in the experimental group and subjects in the control group to determine if randomization was effective in spite of subject mortality.

Limitations

The present research made no claim that a "learning acceleration" tape treatment program would be effective if the student was not motivated. Motivating students remains a difficult problem. But many students show at least a desire to do well academically, even if they often fail to realize this objective. For those students who sincerely wish to experience greater academic success, the techniques of the present treatment offer one such systematic route. While these techniques do not represent an exclusive path to improvement of study habits, the trend of the best, recent research favors this type of approach to helping students improve academically. It was hoped that the treatment methods could lead the student to experience the satisfaction of achievement and the inherent reward of independent learning.

Field research of the present nature faces many obstacles. Cook & Campbell (1979) point out that when research leaves the laboratory, internal validity is often sacrificed in the interest of external validity. In other words, less control is possible when one conducts research in field studies; however, the findings from field studies may be more relevant to actual problems than those established by laboratory research. One limitation of the present research was the use of students from three different psychology instructors. Although randomization was used to control for instructor differences, the error variance in the study may have increased. As a practical matter it was impossible to find a sufficient number of subjects without drawing subjects from

several instructors. Psychology instructors teach no more than two sections of Introductory Psychology at the University of North Carolina at Wilmington. Yet, it is only in these classes that students have an incentive to participate in research, as two credits for experimental participation are required by each instructor.

A considerable number of volunteers did not attend the initial session or dropped out later. Table 1 in Chapter III shows the subjects' attendance for the five treatment sessions. This subject mortality created a threat to the internal validity of this study. The greatest loss of subjects who had started treatment occurred in the fourth session, when 14 subjects failed to show up for treatment. This loss of subjects seemed clearly related to the fact that Thanksgiving vacation began later in the week, and many students left early for vacation.

Cook & Campbell (1979) note that random assignment does not inevitably assure comparability of groups on post-treatment data. If one assumes that attrition is systematic, then one needs to describe the ways in which it is systematic and try to control for these factors in the statistical analysis. If one assumes that the attrition has been random, one can continue with the analysis of the data as coming from a randomized experiment. These authors suggest that when pre-treatment scores exist, they may be used to ascertain the status of the attrition. In the case of the present research the midterm examination scores and the pre-treatment ISHA study skills scores of the experimental subjects who finished treatment were compared to the same scores of the control group. An analysis of variance was performed which found that no significant differences existed between the experimental group and the control group

on these pre-treatment measures. This procedure suggested that the treatment group and the control group were still comparable in spite of attrition.

Finally, a threat to external validity in this study consisted of the fact that experimental and control subjects were volunteers. The fact that the subjects were volunteers was not considered a substantial liability, as the treatment was intended for those who would elect to receive it. Volunteers may more resemble students likely to seek these types of services at a counseling center than students in general. Also, there may have been a greater likelihood that students enrolled in a psychology course would practice techniques that were of a psychological nature than students in general.

CHAPTER IV

THE FINDINGS

The purpose of this study was to evaluate the effectiveness of a "learning acceleration" tape treatment program in helping students achieve higher grades in Introductory Psychology classes. The treatment consisted of self-management and study skills techniques that were presented to students via cassette tape recordings once a week during five weekly sessions prior to the students' final examinations. The effects of the treatment were evaluated by determining differences in final examination and course grade scores in Psychology 105 between subjects in the experimental group and the control group. Post-treatment scores on the McGraw-Hill Inventory of Study Skills and Attitudes were evaluated to determine differences between subjects in the experimental group and the control group regarding study habits and attitudes. The Statistical Package for the Social Science (SPSS) ONEWAY program was used for the analysis of variance. A self-report instrument, the "Subjects' Evaluation of the Experiment" questionnaire, was used to determine the subjects' perception of the treatment in terms of its value in improving study performance.

Subjects for this study consisted of 88 student volunteers who were enrolled in six sections of Introductory Psychology during the fall semester of 1982 at the University of North Carolina at Wilmington. Subjects were randomly assigned to either the experimental group or the control group. The experimental group consisted of 40 subjects who had completed treatment. The control group consisted of 48 subjects who neither met nor received treatment. Table 2, located in Chapter III,

describes the sample in terms of sex, race, age, and Scholastic Aptitude Test (SAT) scores.

All experimental subjects received the treatment via cassette tapes and the use of specified materials. A complete transcript of the treatment tapes and related materials is provided in Appendices A and B. The treatment consisted of self-management and study skills techniques designed to help students improve academic performance in Introductory Psychology. The self-management techniques included goal setting, self-monitoring, self-reinforcement, planning, and the construction of a formal behavioral contract. The study skills techniques presented certain principles of learning, forgetting, and remembering; several specific study strategies were modeled, and the benefits of systematic study and review were emphasized.

Findings Related to the Null Hypotheses

The differences between students receiving the treatment and those not receiving treatment were studied in terms of their final examination and course scores in Psychology 105 and their post-treatment study habits and attitudes as measured by the McGraw-Hill Inventory of Study Habits and Attitudes. Findings regarding the null hypotheses follow.

Hypothesis 1:

> As a result of participation in the "learning acceleration" tape treatment program there will be no difference in the final examination scores in Psychology 105 between subjects in the experimental group and subjects in the control group.

An analysis of the midterm and final examination mean scores in Psychology 105 and standard deviations by group treatment is shown in Table 3. A review of Table 3 shows that the experimental group had a midterm mean score of 78.82 and a final examination mean score of 74.65. The control group had a midterm mean score of 78.39 and a final

examination mean score of 66.19. Both the experimental and control groups showed a decrease in performance on the final examination; however, the experimental group had a mean score on the final examination that was 8.46 points higher than the mean score of the control group.

Table 4 reports an analysis of variance by group for final examination scores in Psychology 105. The analysis of variance showed that there was a significant difference between the experimental group and the control group on the final examination scores at the .05 level of confidence.

Therefore, Hypothesis 1 was rejected because there was a significant difference between the experimental group and the control group.

Hypothesis 2:

> As a result of participation in the "learning acceleration" tape treatment program there will be no difference in course grade scores in Psychology 105 between subjects in the experimental group and subjects in the control group.

An analysis of the course grade scores relative to the midterm scores in Psychology 105 and the standard deviations by group treatment is shown in Table 5. A review of Table 5 shows that the experimental group had a midterm and course grade mean score of 78.82 and 79.42 respectively. The control group had a midterm and course grade mean score of 78.39 and 76.38 respectively. The course grade mean score for the treatment group was 3.08 points higher than the mean score of the control group.

Table 6 reports an analysis of variance by group for course grade in Psychology 105. The analysis of variance showed that there was no significant difference between the experimental group and the control group on the course grade scores at the .05 level of confidence.

Therefore, Hypothesis 2 was not rejected because there was no significant difference between the experimental group and the control group.

TABLE 3

Midterm and Final Examination Mean Scores and Standard Deviations According to Group.

Group	N		Midterm	Final
Experimental	40	$\bar{X}$	78.82	74.65
		SD	8.69	13.88
Control	48	$\bar{X}$	78.39	66.19
		SD	11.97	20.69
Total	88	$\bar{X}$	78.59	70.03
		SD	10.55	18.32

TABLE 4

Analysis of Variance for Final Examination Scores in Psychology 105 -- Summary of Comparison by Group.

Source	df	Sum of square	Mean squares	F ratio
Between	1	1562.48	1562.48	4.86*
Within	86	27642.30	321.42	
Total	87	29204.78		

Group	N	Mean	Standard deviation
Experimental	40	74.65	13.88
Control	48	66.19	20.69
Total	88	70.03	18.32

*$p < .05$ (level of significance)

TABLE 5

Midterm and Course Grade Mean Scores and Standard Deviations According to Group

Group	N	Midterm	Course Grade
Experimental	40	$\bar{X}$ 78.82	79.42
		SD 8.69	7.34
Control	48	$\bar{X}$ 78.39	76.38
		SD 11.97	11.15
Total	88	$\bar{X}$ 78.59	77.76
		SD 10.55	9.68

TABLE 6

Analysis of Variance for Course Grade in Psychology 105 -- Summary of Comparison by Group.

Source	df	Sum of squares	Mean squares	F ratio
Between	1	203.00	203.00	2.19
Within	86	7946.97	92.40	
Total	87	8149.96		

Group	N	Mean	Standard deviation
Experimental	40	79.42	7.34
Control	48	76.38	11.15
Total	88	77.76	9.68

Hypothesis 3:

> As a result of participation in the "learning acceleration" tape treatment program there will be no difference in study habits and attitudes as measured by scores on the Inventory of Study Habits and Attitudes between subjects in the experimental group and subjects in the control group.

An analysis of the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA) mean scores and standard deviations by group is shown in Table 7. Low scores are indicative of poor study habits and attitudes. An analysis of variance (see below) showed that there was no significant difference between the experimental group and the control group on the pre-treatment ISHA scores. A review of Table 7 shows that the experimental group had a pre-treatment mean score of 25.82 and a post-treatment mean score of 29.52. The control group had a pre-treatment mean score of 26.29 and a post-treatment mean score of 29.48. The scores of the experimental group increased in the desired direction, but the scores of the control group increased as well.

Table 8 reports an analysis of variance by group for post-treatment scores on the ISHA. The analysis of variance showed that there was no significant difference between the experimental group and the control group on the post-treatment scores of the ISHA at the .05 level of confidence.

Therefore, Hypothesis 3 was not rejected because there was no significant difference between the experimental group and the control group.

Additional Analysis

An additional analysis of variance was performed on the midterm examination and pre-treatment ISHA scores to determine if the experimental and control groups were still comparable on these pre-treatment measures in spite of subject mortality. A SPSS ONEWAY analysis of variance program was used for this purpose. Table 9 reports the analysis of variance between

TABLE 7

Inventory of Study Habits and Attitudes: Pre-treatment and Post-treatment Mean Scores and Standard Deviation According to Group.

Group	N	Pre	Post
Experimental	40	$\bar{X}$ 25.82	$\bar{X}$ 29.52
		SD 7.02	SD 8.32
Control	48	$\bar{X}$ 26.29	$\bar{X}$ 29.48
		SD 8.02	SD 8.01
Total	88	$\bar{X}$ 26.08	$\bar{X}$ 29.50
		SD 7.54	SD 8.11

TABLE 8

Analysis of Variance for Post-Treatment Inventory of Study Habits and Attitudes Scores -- Summary of Comparison by Group.

Source	df	Sum of squares	Mean squares	F ratio
Covariate	1	3475.85	3475.85	
Between	2	13.91	6.95	.26
Within	84	2237.62	26.64	
Total	87	5727.38	65.83	

Group	N	Mean	Standard deviation
Experimental	40	29.52	8.32
Control	48	29.48	8.01
Total	88	29.50	8.11

the experimental group and the control group on midterm examination scores. No significant difference was found ($F = .03$; d.f. = 1/87; $p = .84$). Table 10 reports the analysis of variance between the experimental group and the control group on the pre-treatment ISHA scores. Again, no significant difference was found ($F = .08$; d.f. = 1/87; $p = .77$). An inference can be made on the basis of these analyses that the experimental group and the control group were comparable in terms of achievement in Psychology 105 and study habits and attitudes as measured by the ISHA. Random assignment seems to have been effective, despite subject mortality.

Subjects' Evaluation of Treatment

Table 11 reports the results of the "Subjects' Evaluation of the Experiment" questionnaire, a self-report instrument used to determine the experimental subjects' perception of the treatment. The 40 experimental subjects provided yes/no responses to ten questions regarding aspects of the treatment and provided written responses to several open-ended questions.

The results indicated that the treatment positively affected both the quantity and quality of the subjects' study behavior. The results showed that 80 percent of the respondents felt the treatment helped them increase time on task; more than 85 percent of the respondents indicated that treatment helped them learn better; and more than 90 percent of the respondents felt that they were better able to remember material as a result of the treatment. It is noteworthy that 100 percent of the respondents indicated that they would use the techniques of the treatment in other classes or study situations.

Seventy percent of the respondents indicated that they had used reward for studying, but only 60 percent believed that the use of reward

TABLE 9

Summary Table for Analysis of Variance Between the Experimental Group and the Control Group for Midterm Examination Scores in Psychology 105.

Source	df	Sum of squares	Mean squares	F ratio
Between	1	4.07	4.07	.03
Within	86	9683.20	112.59	
Total	87	9687.27		

TABLE 10

Summary Table for Analysis of Variance Between the Experimental Group and the Control Group for Pre-Treatment Inventory of Study Habits and Attitude Scores.

Source	df	Sum of Squares	Mean squares	F ratio
Between	1	4.73	4.73	.08
Within	86	4943.68	57.48	
Total	87	4948.42		

TABLE 11

Responses to the "Subjects' Evaluation of the Experiment" Questionnaire (N = 40; Subjects Completing all 5 Treatments).

Item #	Question	Response	
		YES	NO
1.	The techniques suggested in the tapes helped me increase the amount of time that I spent studying.	80%	20%
2.	These techniques improved my attitude toward studying.	97%	3%
3.	These techniques helped me to learn material better.	87%	13%
4.	These techniques helped me to remember material better.	92%	8%
5.	These techniques made me feel more in control of my studying.	90%	10%
6.	I made my own "learning tape."	27%	73%
7.	The study records that I kept were pretty accurate.	92%	8%
8.	I usually gave myself some reward for studying.	70%	30%
9.	I believe that these rewards helped me get on task.	60%	40%
10.	I will use these techniques in other classes or study situations.	100%	0%

helped them get on task. Only 27 percent of the respondents indicated that they had made their own "learning tape."

Subjects were also asked to respond to several open-ended questions regarding the treatment (see Appendix D). Generally the responses were favorable and supported the value of the treatment. Typical responses to an item asking what the subjects liked about the experiment indicated that the treatment created an interest in studying, improved time use, confidence, and the ability to remember course material. Typical responses to an item asking what subjects disliked about the experiment indicated that subjects disliked having to come to so many sessions, and the additional work the treatment required. When asked for additional feedback, typical suggestions were that the researcher check the study charts, schedule fewer sessions, and hold the credit slips to the end to improve attendance. All of the subjects' comments are included in Appendix D.

Summary of the Findings

In conclusions, the results of this study showed that there was a significant difference between the mean scores of the experimental group and the control group on the final examination in Psychology 105. The experimental subjects who completed treatment had a mean score on the final examination that was 8.46 points higher than the mean score for subjects in the control group. The course grade mean score for the experimental group was 3.08 higher than the mean score for the control group, but this difference was not significant. The post-test mean scores on the McGraw-Hill Inventory of Study Habits and Attitudes for the experimental group and the control group were 29.52 and 29.48 respectively; these differences were not significant. Responses to the "Subjects' Evaluation of Experiment" questionnaire indicated that a high percentage

of subjects who completed treatment felt that participation in the program helped them increase time on task, and their ability to learn and remember course material. All of these subjects indicated that they would use the techniques of the treatment in other classes or study situations.

CHAPTER V

CONCLUSIONS, DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Summary

Counselors in a college setting are often approached by students seeking more effective methods of study; yet, there are relatively few empirically validated methods for helping students improve academic performance. The purpose of this study was to evaluate the effectiveness of a "learning acceleration" tape treatment program in helping students achieve higher grades in Introductory Psychology classes. The treatment consisted of self-management and study skills techniques that were presented to students via cassette tape recordings during five consecutive weeks prior to the students' final examinations.

Subjects for this study consisted of 88 student volunteers who were enrolled in six sections of Introductory Psychology during the fall semester of 1982 at the University of North Carolina at Wilmington. Motivation for students to participate consisted of a desire for a better grade in the psychology course, and each experimental subject received two experimental credits for attending the first two treatment sessions. The experimental credit slips did not seem to have much effect on the subjects' attendance pattern. Subjects were randomly assigned to either the experimental group or the control group. Subjects in the experimental group listened to the treatment tapes and completed related materials in small groups. The experimental group consisted of 40 subjects. The control group consisted of 48 students who neither met nor received

treatment. A similar treatment was made available in the next semester for any control subject who wished to participate in a similar program, but no control subject asked for treatment.

The independent variable in this study was the "learning acceleration" tape treatment program. The dependent variables were the subjects' scores on the final examination and course grade in Psychology 105, and their post-treatment scores on the McGraw-Hill Inventory of Study Habits and Attitudes (ISHA).

An analysis of variance was used to determine if significant differences existed between the experimental group and the control group on these dependent variables following treatment. Also, a self-report instrument, the "Subjects' Evaluation of the Experiment" questionnaire was used to determine the subjects' perception of the treatment in terms of its value in improving study performance.

Conclusions and Discussion

The results of this study lead to the following conclusions:

1. The first hypothesis in the present study stated that there would be no difference in the final examination scores in Psychology 105 between subjects in the experimental group and subjects in the control group as a result of participation in the "learning acceleration" tape treatment program. This hypothesis was rejected as subjects in the experimental group had final examination scores that were significantly higher than the scores for subjects in the control group. Subjects completing treatment made a mean score on their final examinations that was 8.46 points higher than the mean score of control subjects. As a result of this finding, the researcher concludes that participation in such a treatment program can produce significant increases in final examination scores in Psychology 105.

This finding suggests that the combination of self-management and study skills techniques presented in the treatment was effective in helping students achieve higher grades in Psychology 105. As noted previously, knowledge of better study methods has little value for students, unless they can put this knowledge to use. It seems that students were able to implement many of the study improvement recommendations that were suggested in the treatment. It may be that the self-management techniques provided a structure which enabled students to put new study techniques to use. Also, the tape presentation format was designed to keep the subjects' attention by asking them to complete many tasks during their treatment sessions. In addition, the subjects' active participation was required in several assignments during treatment. Activities such as these may have helped focus the students' attention, and involved them in the task of study improvements.

The treatment required a relatively small investment of time by subjects. Each of the five treatment sessions took about 30 minutes. It is unlikely, however, that just listening to the tapes would have resulted in increased academic performance. It appears that many students were able to use the suggestions of the treatment when studying for Psychology 105. The investment of time and effort by students to put these techniques to use yielded a return of better than 8 points in performance on the final examination. The average increase of more than 8 points, that was made by experimental subjects when compared to control subjects, gives the finding practical significance. It is noteworthy that a similar increase on final examination scores in Psychology 105 was made by subjects in the pilot study (see Appendix C, Item 17). Counselors can recommend this type of treatment program to their clients, confident that these techniques offer a method of improving study performance that is worthwhile

2. The second hypothesis in the present study stated that there would be no difference in course grade scores in Psychology 105 between subjects in the experimental group and subjects in the control group as a result of participation in the "learning acceleration" tape treatment program. This hypothesis was not rejected as the course grade scores in Psychology 105 were not significantly higher for subjects in the experimental group than the scores for subjects in the control group. Subjects completing treatment made a mean score on their course grade in Psychology 105 that was 3.08 points higher than the mean score of the control subjects. As the treatment program did not begin until after the students' mid-term examination, part of the students' course grade had been determined before the time of the intervention. The purpose of examining course grade performance in Psychology 105 was to ascertain if higher final examination scores for experimental subjects would be sufficient to affect course grades scores. Since the second hypothesis was not rejected, the researcher concludes that the treatment was insufficient to affect course grade scores in Psychology 105.

It is worth noting that in the pilot study (Appendix C, Item 17) significant differences were found on course grade scores in Psychology 105 between subjects who participated in a similar treatment and those who did not participate. As noted in that section, the pilot study was conducted during a five-week summer session, so the treatment period included most of that semester.

3. The third hypothesis in the present study stated that there would be no difference in study habits and attitudes as measured by scores on the Inventory of Study Habits and Attitudes (ISHA) between subjects in the experimental group and subjects in the control group as

a result of participation in the "learning acceleration" tape treatment program. This hypothesis was not rejected as the ISHA scores were not significantly higher for subjects in the experimental group than the scores for subjects in the control group. Subjects completing treatment made a mean score on the ISHA that was almost identical to the mean score of subjects in the control group. As a result of this finding, the researcher concludes that participation in such a program produces no significant differences in study habits and attitudes as measured by the ISHA between subjects receiving treatment and control subjects.

As pre-treatment scores on the ISHA were available, it is interesting to note that the scores for subjects in both the experimental group and the control group increased. The pre-treatment administration of the ISHA may have increased the awareness of all subjects regarding the values of study strategies in the competitive, college environment.

Implications

The results of this study suggest several implications:

1. These findings imply that self-management techniques enable students to change and improve study behavior. Study skills recommendations have little value if students are unable to implement them. Many students may have difficulty changing long-established study behavior. Self-management techniques may provide the structure that enables students to incorporate study improvement suggestions into their study routines. The students' success in achieving higher academic grades indicates that self-management techniques helped students operationalize study skills suggestions.

2. These findings imply that the study skills suggestions used in the treatment are effective when used. As noted in the review of the

literature, it has sometimes been difficult to validate study skills techniques because it was uncertain if students had used the suggestions. The present findings indicate that these study techniques have value when they are put into practice by students.

3. These findings imply that the activities used in the treatment were effective in involving students in the study improvement program. Many aspects of the treatment required the students' active participation. For example, students were asked to graph their study time, write a behavioral contract, and make their own "learning tape" for review purposes. Activities of this type may more effectively involve students in the treatment process than the use of study skills lectures or handouts.

4. These findings imply that a tape format approach can serve as an effective instructional device. The tape format may have served to focus the students' attention on the content material being presented. Students were never sure what the treatment tape would ask them to do next, so they needed to pay attention. The tape format may have been regarded as a novelty by some students, and may have held their interest for that reason.

5. These findings imply that students can utilize the treatment materials with minimal supervision. The self-management techniques emphasize taking responsibility for one's self, and it seems appropriate that students can work on these materials independently. Some students may prefer the option of working without supervision. The tape format allows students to initiate treatment when they feel motivated, without reference to prescribed starting dates and session times found in some study skills programs. Students can participate in such a program when they feel the need, and at a time of their own choice.

6. The success of the treatment format implies that counselors can serve greater numbers of clients than would be possible otherwise because of limitations of time and personnel. The use of a tape format program could allow counseling centers to deliver these types of services in a cost-effective manner. Because of budgetary restraints many college counseling centers are being asked to provide more services with less staff. The use of an effective taped intervention program might offer a helpful solution in such circumstances.

7. These findings imply that students may be able to improve their academic performance in other content classes by the use of the techniques suggested in the treatment program. Although Introductory Psychology was chosen as the target class for implementing the suggestions of the present treatment, the techniques suggested in the treatment program can be applied to a variety of content classes. For example, nursing instructors at a local technical institute are using the tape format and materials from the treatment to help student nurses study in more efficient manner.

8. These findings imply that many types of students can profit from a similar treatment program. The treatment program did not emphasize a "remedial approach," nor were subjects selected on the basis of low achievement or study skills deficits. Students might be more successful in college if all were familiar with strategies important to academic achievement.

9. These findings imply that students found the treatment program to be an acceptable method of improving their academic performance. The results of the "Subjects' Evaluation of the Experiment" showed that a

majority of the subjects made favorable comments when responding to open-ended questions concerning the treatment (see Appendix D). For a program of this nature to be effective, it is important that the students perceive the treatment as helpful and worthwhile. The students' feedback in this section of the questionnaire generally supported the value of the treatment.

10. The results of this study imply that the treatment program helped subjects gain a sense of control over their study behavior. The students' responses to specific items in the same questionnaire indicated that a high percentage of those subjects who completed treatment felt more in control of their study behavior and more able to learn and remember material (see Table 11). These students reported that they felt more confident about their learning ability in other college courses. Additional benefits of participating in such treatment program may be evident to students as they complete future college course work.

Recommendations For Further Research

This study suggests several additional approaches to research with learning techniques:

1. A future research study might investigate the utility of specific components of the present treatment. It would be interesting to ascertain which aspects of the treatment were particularly effective in helping students realize higher grades.

2. Future researchers might collaborate with instructors to incorporate certain learning techniques as a regular part of psychology courses. For example, students in a certain section of a particular course could be asked to make "learning tapes" throughout the semester. Production of

such tapes would show that the students had processed the content material. The active participation involved in the production of these tapes might lead to greater content mastery by students.

3. A future research study might investigate the effect of the treatment with students enrolled in other introductory classes, such as General Biology.

4. Another research option would be to assess the treatment with students enrolled in higher level courses. This research project might determine if such a treatment would be beneficial for experienced students.

5. A future research study might investigate the effect of the treatment with students identified as having study skills deficits. It would be of interest to determine how this type of student would respond to the treatment program.

6. A future research study might assess the treatment with students who are highly motivated and face difficult course work, such as students enrolled in a nursing program.

7. Another research option might be the creation of a "learning lab" for students experiencing difficulty in specific content courses. Students enrolled in large sections of introductory science courses, for example, may have difficulty adjusting to an impersonal learning environment. Arrangements might be made to provide learning assistance to these students during the laboratory periods scheduled with these classes.

8. An additional research option might include pairing students as "peer study-managers." These pairs could help manage each other's study routines, introducing an element of feedback and accountability to the present treatment.

9. Future researchers might structure a study which includes interaction between a counselor and the subjects as part of a learning skills

program. Such a study might be based on the development of a one-to-one relationship as a support system. These procedures might enhance the impact of the intervention by individualizing and personalizing the treatment.

10. Finally, a future research project might investigate the value of a series of treatment tapes which might be used with individual clients. These tapes might be organized around certain topics, such as self-management and time-management. Specific tapes might be assigned to clients as needed to assist with specific problems and be discussed during later counseling sessions.

In conclusion, this research attempted to measure the effectiveness of a "learning acceleration" tape treatment program in helping students achieve higher grades in Introductory Psychology. Experimental subjects made grades on their final examination that were significantly higher than the grades of the control subjects. The subjects' reactions to the treatment were generally positive and the additional benefits of the treatment program may be felt by students in later course work. The delivery of learning assistance services along the lines of the present research remains a worthwhile venture which justifies additional research effort.

APPENDIX A
TREATMENT TAPE TRANSCRIPTS

Session I

Thank you for volunteering to participate in this research project. This is Mr. Reilly speaking. I will be available to answer any questions you have about this research project. Basically what we are trying to do here is package and deliver to you the same study techniques that have proven successful in helping students improve when they come in individually. Both the research of others and our own experience convenience us that these techniques work in helping students get better grades. If you use these techniques we feel that the immediate benefit to you will be a higher grade in Psychology 105 than you would have received otherwise. But more importantly, if you find these techniques have helped you, you will have developed some new skills that can help you throughout college.

Self-Monitoring

The first procedure we need for you to follow is called self-monitoring. We would like for you to record each time you finish studying for Psychology 105, keeping track of how long you study or work on assignments. It has been found that just keeping track of a behavior can improve that behavior. Recording provides you with feedback, provides structure, and sets the s tage for rewarding this behavior. Most students will study more when they have this kind of feedback.

Daily Study Record

Please look at the sample PSY 105 DAILY STUDY RECORD (See Appendix B, Item 3) inside your folder. On the example sheet Joe Student has studied Psychology several times during the week. On Monday he recorded that he studied from 1:15 to 2:00 p.m., the number of minutes on task being 45. He rewarded his behavior by listening to music. On Wednesday he studied from 7 p.m. to 8:30 p.m. for a total of 90 minutes. This time he not only read in the textbook but also completed some review exercises in the workbook keyed to his text. When he finished, he gave himself a dish of ice cream. This student had an exam on Monday, so we see that he studied again on Sunday, for about 120 minutes. He rewarded himself by watching a movie on TV.

Recording Sheets

Please take the sample sheet and blank sheet (See Appendix B, Item 3 and 4) with you and record each time you complete a psychology assignment. Since this recording is a new behavior, how can you get yourself in the habit of doing it? Keeping the sheets handy, in your textbook might help. If you can do it the first two or three times, it will become easier thereafter. Try to get in this recording habit right away. You will need this information to complete your work flow graph in your folder on your next visit. Please try to record each time you finish studying. If you record right before you reward, you will be reinforcing both the study behavior and the recording behavior. You will need to bring the PSY 105 DAILY STUDY RECORD with you when you return for your next session.

Self-Reward

You will notice that on your recording sheet there is a place to record rewards that you have given yourself for studying Psy 105. The principle of reinforcement is very simple and easy to use. Anyone who has ever trained an animal knows that rewards can be used to shape a behavior. Each day you give yourself many things that could be used to reward youself. Food, drink, TV, music, magazines, pleasure reading can all be used as rewards to increase your study behavior. Why not get production out of these things by rewarding yourself for the tasks that you need to complete. The best types of reward are direct and immediate. Before you begin to study, think of the reward you will give yourself when you finish. You can get started using rewards to increase and reinforce your study behavior right away. See what a difference it will make for you.

The last thing that we need to talk about today is how to be "test wise." The "test wiseness" we mean that some people are better at taking tests than other people. We'll be talking more about preparation for tests in the future but right now we want to concentrate on some of the techniques that might be helpful for you at the point that you sit down to take a test. Don't go to the classroom before a test and start asking and answering questions with other students. You won't pick up much information at this point, and the danger is if you don't know the answer it may hurt your confidence. It is better to just sit and relax and try to calm yourself if you're feeling a little bit nervous before a test. Another thing to be avoided is any kind of what we call "negative self-talk." In other words it is better to tell yourself positive things about how you will do on the test rather than to think about how badly you may do. So it is better to say to yourself "if this test is hard for

me, it will be hard to everyone." Try to have a positive attitude and avoid negative thinking.

When you get into the test itself it is a good idea to pay careful attention to the directions. It might be a good idea to skim the test and see how much the different sections are worth and spend your time proportionately. If you are taking a multiple choice test, for example, a good strategy might be to go through the test and answer the questions that you know first. Then, go back to the questions you have the best chance at answering. In other words you need some kind of system. Of all the questions you leave blank perhaps you could circle the ones you have the best chance of answering correctly and go back to those first. This is especially true if the test is a timed test and you are afraid you won't have enough time. Finally, if time is starting to run out, you need to guess. There is no penalty for guessing in a teacher made test, so you need to fill in some kind of answer and hope that you may have a chance of getting it correct. There is a handout in your folder called "How To Be Test Wise" (see Appendix B, Item 5) and we need to look at that together. This is a handout that you can take with you when you go today. But I would like to go through some of the examples with you. The handout is designed to help you take multiple choice tests. The first thing that we want you to look at are some possible clues in the construction of the test items that might give you hints to what the correct answers are. Look at the example 1A. It is sometimes the case that the most general alternative will be the correct answer. Take a moment and read the first multiple choice question and see which alternative you think is the correct answer. (Pause) In this case the correct answer is "c." This example illustrates that sometimes the most general answer is the correct one. Look at the next example. Psychological research

(a) involves only human studies, (b) involves only animals, (c) can involve both the study of human and animals, and (d) involves animals similar to humans such as apes, only. Which do you think is the correct answer? Well, this is an illustration of the most general answer being correct. Answer C is correct, involving the study of both human and animals.

Another consideration can be length. Sometimes the longest alternative is the correct alternative. Look at the first example. It sometimes requires the tester to use more words to explain a correct answer than it does to create a distracter or wrong answer. The example on the top of page two illustrates this principle. Notice the length of the correct answer. (Pause). Now let us move to example two. Pick the best choice in the following example: The experimental method is (a) so complex that it cannot produce the same results twice, (b) provides a possibility for proving hypotheses; the experimenter can repeat the experiment and can continue to obtain the same results, (c) not as popular as the survey method, (d) used only in biological settings. In this case the explanation of what an experimental method is required a longer alternative then any of the incorrect alternatives.

Similarly, the correct alternative is sometimes of middle value. If you have no indication of what the correct answer is a "test wise" student will usually pick one that is of middle value. Look at the next example. The mature human being has how many teeth? Well, it is that middle figure of 32. Let us look at another example. Does a social attachment between infant and mother become obvious when the infant is one month old, four months old, between six and nine months old, or between nine months and one year? In this case the correct answer is of middle value, between six and nine months old.

Moving to the bottom of page two, have you ever noticed some test items have two alternatives that almost mean the same thing. Very often that is an indication that both are wrong. If the difference is so slight that no one can tell them apart, neither one of them can be the correct answer. Read the example on the top of page three. See if you can eliminate the two alternatives that are almost identical. Let us try a similar example in number two. When subjects were confronted with studies involving embarrassing actions, researchers found that the persons tended to prefer to (a) to be with others, (b) be with peers, (d) be alone, (d) discuss the experiment. Items "a" and "b" are very similar. So, in this case those alternatives are wrong and the correct answer is "c."

Another possible clue may occur when two alternatives are opposite. This may be a direct indication that this is the concept that is being tested. In other words, one of those pairs of opposites is the correct answer. Look at section E, example 1. The planarian has: (a) an anterior brain, (b) three legs, (c) red eyes, (d) a posterior brain. The fact that "a" and "d" are opposites may be an indication of the concept being tested. You can forget about alternatives "b" and "c". In this particular case "a" is the correct response. Let us look at a similar kind of item from a Psychology textbook, item number 2. Holding a card over the left eye and looking at a two dimensional drawing of a street in Paris is an example of using: (a) monocular clues, (b) binocular clues, (c) bi-stabile clues, (d) superimposition. If you had no idea of the answer it might be a good idea to choose between "a" and "b." And in this particular case the mention of one eye might be an indication that "monocular." item "a," was the correct answer.

In summary, there are some things that you can do to help yourself in a test situation. Calm yourself, avoid negative thinking, have a strategy for managing the time and number of items. Finally, remember some of the criteria we have just mentioned. The degree of generalization in an alternative, length, middle values, similarities and opposites can sometimes be a hint as to which are the correct alternatives in a multiple-choice test. Take the material in your folders with you and try to get started reinforcing your study behavior right away. We will see you in a week for your second session. Thank you very much for your participation.

Session II

Thank you for coming in for your second session. The first thing we need to talk about is planning study behavior. For most students the rewards for studying are very distant. The prospect for a higher grade months from now may not be powerful enough to overcome more immediate pleasurable experiences like watching TV, talking with friends, or other activity that competes with study time. Unless you are organized, you may be fighting a losing battle. If you just wait until you feel like studying, you may never get much done. Interviews of people who have accomplished something, whether it be in athletics or in writing a novel, make themselves work, even when they don't feel like it. Most writers write on schedule...if writers only wrote when they felt like it, there would be a lot fewer books in the library.

Benefits of Planning

Planning a schedule does not need to be any more than looking ahead and trying to lay out some work times. For most students continuing to

work is not the problem. The problem is getting into the work in the first place. Often a schedule can be the force that gets you started in the first place. Think about your own routines. What has to happen for you to start studying? Time of day can be a cue to get started once it becomes established as a habit. If you study everyday from three p.m. to five p.m. for a week, it soon becomes the natural thing to do at this time. If you establish this habit for two weeks, it will take little effort to maintain the behavior throughout the semester. What other factors set you up to study? Does it have to be quiet? Do you get started better if you see others studying?

Prime Time

Scheduling can help you use your "prime time". "Prime time" is the time you are most alert and full of energy for studying. When does your "prime time" occur? This is the time you get the best return on the time you spend. If your "prime time" occurs in the morning, that's when you should be studying. Don't waste your "prime time" doing chores and tasks that don't require your full attention. Put off cleaning your room or shopping until the evening when you are tired. An hour of work now, may be worth two when you are tired. It makes more sense to study while you are fresh. If you do the studying when you are tired, you may have little to show for it.

Breaking Down Assignments

Planning can also be beneficial in that looking ahead and laying out the semester on a calendar, can help prevent you from getting stuck with a mountain of unfinished reading and assignments in the last weeks of class. What a drag to have to complete a paper or assignment that last week, when you need the time to be finishing readings and studying for

finals. Planning can help you avoid this. It is easier to get started on an assignment if you break it into smaller parts. The prospect of reading five chapters for an exam may seem like so much work that you put it off even more. But if you break it down, and just do a piece, at least you will have gotten started. Instead of telling yourself "I have to read five chapters," you may say to yourself "My goal for tonight is just to read 15 pages and answer some questions in the workbook".

Benefits of Review

Planning can help you finish your assignments and leave time for review. One of the most important findings by educational psychologists is how quickly we forget. Forgetting takes place rapidly, and most forgetting takes place right away. Unless you schedule review as part of your study pattern, you will lose the material you once knew. Most students do not realize how important review is to permanent learning. By scheduling, you begin to gain control. If you can use this control not only to stay up to date, but also to review on a regular basis, you will have a great advantage over most students.

Planning Exercise

Why not try to lay out some specific times for your Psychology assignments this week? Using a pencil, find the Psychology 105 Daily Study Record that you will be taking with you to record your study behavior during the coming week and see if you can do some planning now. See if you can lay out some times now that make sense to you. Take advantage of your "prime time." Go ahead and take a few minutes now to lay out some times on your sheet in your folder now. (Pause 2 minutes) Now take these sheets with you and continue to record in ink your actual study behavior during the week. Let's see if you aren't able to stick to

your schedule at least part of the time. You may find that this planning helps you get started and puts studying more under your conscious control.

The last thing we need to talk about today are the study records that you kept for the last week. Hopefully, you kept track of your study on the Psychology 105 Daily Study Record. At this time please examine the sample graph (See Appendix B, Item 6) for Joe Student which is in your folder. Notice that Joe has graphed his study time for last week. The amount of study time in minutes is indicated in the left vertical axis. The weeks are indicated on the bottom horizontal axis. Total the number of minutes you studied last week and fill in your bar graph in pencil. If you have forgotten your charts please estimate from memory and complete your graph. Leave the completed Psychology 105 Daily Study Record from the past week in your folder. Please make an extra effort to keep track of the time you spend in Psychology during the next week. And bring your record sheets once more when you return next week so that you can add to your graph at that time (See Appendix B, Item 7).

Also, in addition to the Psychology 105 Daily Study Record take the handout on time management (See Appendix B, Item 8) with you and read it at home. If you have been able to reward yourself when you record your study behavior, your recording behavior should be becoming established. Please continue to reward yourself for study and recording if you can.

When you hand the secretary your folder, make an appointment for your next session.

Session III

Thank you for coming in for your third session. Today we are going to present a method of mastering your psychology assignments that research has shown to be effective with college students like yourself. If

you can change your behavior and start using this approach we feel that it will give you a big advantage over the average student.

Study Method

Students often complain that their mind wanders when they are attempting to study, and although they spend time with their books, they have little to show for it, in terms of what they feel that they have learned. We have a technique that will keep you active which we would like for you to use on your reading and classnotes. The method is called "Look, Ask, Say, Re-Play" and it works like this. The first step in this method is to "Look" over the entire chapter or section to see what is coming. By looking over the entire chapter and reading the final summary you will have a better feeling for what are the most important parts. Also, we know that memory is better in context. In other words, it is hard to remember isolated details. But if you see the big picture, the details will attach themselves to it, and will be more available to you when you try to remember them. You can look over your class notes in the same way before you start to study. The second step in this study method is active questioning. If you "Ask" yourself a question, it sets you up to remember the answer. Often the main headings of a section can be turned into a question. If the heading is "Divisions of the Nervous System" you should ask yourself "What are the divisions of the nervous system?" or "How is the nervous system divided?" This questioning opens the door of your memory, so your ability to recall is stronger. Now read. Read actively to answer the question you have just asked yourself. Read to find out what will the instructor expect you to know. Reread the material until you can answer your own question. If you can answer, there is the proof you know it. You may want to underline or even write out your answer.

The third step is to "Say" the answer aloud. Don't be content just to talk silently to yourself. Reciting important points to combat forgetting is the most powerful technique known to psychologists. The explanation is: To transfer a memory trace from the short-term memory to the long-term memory, the idea must be held in the mind for a short time. When we recite, our minds are thinking and holding an idea long enough to consolidate the neural trace in our brain. Without this conscious holding of an idea in our mind, the trace fades. The fact is if you can't "Say" it, you don't know it. And if you can't say it right after you study you certainly won't be able to give it back later on. Some students like to stop at the end of every page or two, and practice giving the material back. It's a good practice. Don't just put things into your head, practice getting it back!

The last step is to "Re-Play". We know that most forgetting takes place right away, and then slows down. Even the material that you knew a few minutes ago is starting to fade and will be forgotten unless you review. Now is the most productive time for you to consolidate what you have just learned! And if you want to keep this learning you need to look the material over, before you start on new material. The student who knows enough to look over old material before reading new material has a great advantage over the student who does not practice systematic review. Make reviewing old material before going on to new material part of your study routine and you will have a big advantage over most students. It is the best investment in your learning time that you can make.

"Look, Ask, Say, Re-Play". This type of method has been used for years and has helped many students to get better grades. Can you remember?

Can you say it? If you can, you know it. There is a sheet for you to take with you to practice this method on your own reading and course notes (See Appendix B, Item 9). We believe that if you can get in the habit of using this method, it will help you study better from now on. Later on we will ask you to record what you say.

Most students agree that this sounds like a good technique, but are never able to establish it as a new behavior. You have probably been studying your own way for many many years. So establishing a new study habit is sometimes difficult. How can you get yourself to try this method? Well, in the past sessions we have asked you to reward yourself for study time. Now we are asking that you reward yourself only for an effort to use this method. Remember the most powerful rewards are direct and immediate. What rewards can you give yourself right after studying using this method? It could be a break, a drink of some type, food, music, or anything else that you like.

Again we ask you to take the Psychology 105 Study Record in your folder and take a few minutes to plan the week. During the pause take a few minutes to lay out some study times. Then think of some rewards that might work for you in that setting and pencil them in. Don't give yourself the reward unless you use the new "Look, Ask, Say, Re-Play" method at least part of the time you are reading. Please take a few moments now to pencil in some times and some rewards. Pause... Now take this planning sheet with you when you go. Continue to record in pen your actual study and reinforcement behavior during the week.

The last thing we need to talk about are the study records you kept last week. How did you make out? Were you able to stick to times that you had planned? Did having a plan help in any way? Did you study during your "prime time?" Did the plan help you get started?

Please total the number of minutes that you studied last week, and leave the record in your folder. Now look at your bar graph in your folder and pencil in the graph (see Appendix B, Item 7) to how how much you studied during week two of the experiment. Are you spending enough time? Is your time on task increasing, decreasing or about the same as week one? Please take your planning sheet with you when you leave today and bring it to your next session. Next week we will show you how to make a learning tape to help you review for your final. If you don't already have a cassette recorder, see if you can borrow one to use at home next week. That is all for today. Please remember your appointment for your session. Thanks for your participation.

Session IV

Thank you for coming in for your session. Over the course of the past few weeks we have asked you to use a variety of practices that have been shown to be helpful with other college students. We have asked you to keep close track of your study time, noticing the factors that encourage you to study. We have asked you to notice when your best time for study is in terms of alertness. And we have asked you to use the principle of reinforcement, to reward your study and to use the "Look, Ask, Say, Re-Play" study techniques. We have also tried to indicate the benefits of planning, and breaking down tasks to make them more manageable. We hope that these simple behavioral principles will help you during the rest of your Psychology 105 class, and that you will be able to use some of these approaches to get more control of your study behaviors in other courses as well. Today we are going to introduce another technique that students have used successfully for study and review for finals.

Audio Learning Tape

Years ago reel to reel tape recorders were available, but they were leage and bulky and not nearly as convenient to use as the present cassette tape players. In the past students have often thought of taping classes and lectures to help them master coursework, but that is a little different from the method of making a learning tape that I am going to share with you. I have used this method myself when studying for very intense doctoral qualifying exams, and was quite pleased as I feel it helped me pass all seven exams in one sitting. I have used this method many times over the last five years in helping students with difficult courses and I know it can help you too.

The method is quite simple. You need to complete your required readings and review of course notes. And you need to identify by underlying or other methods that course content which you think the instructor is going to require you to know well on exams. Since you can't put all the material on your learning tape, you have to be selective and only include those definitions, explanations, facts and understandings that you think you may have some difficulty recalling at exam time. Instructors can often tip you off in their lectures by their own interest in or enthusiasm for a topic, and you should be sure to include on your tape material the instructor has stressed in class.

To take advantage of this method you need a cassette player and some blank tapes. If you don't own a cassette player, they have become very common and if you ask around among your friends and relatives you should be able to borrow one. You will also need some blank tapes. If you do not have a blank tape we will give you one. The tape you make must be loud enough and easy to listen to or it will be worthless. Check out

your equipment by stopping and listening to a playback. There is no value in making a tape that you can hardly hear.

Each time you study, you should add a few minutes to your learning tape. Use the "Look, Ask, Say, Re-Play" technique and make yourself provide explanations and definitions. We know that the worst thing you can do when you study is to just look over notes and readings. The best thing you can do is be active. Make yourself give definitions and explanations. If you can't say it when you are studying, you won't be able to give at test time. Don't be content just to talk silently to yourself. Reciting important points to combat forgetting is the most powerful technique known to psychologists. Remember: To transfer a memory trace from the short-term to the long-term memory, the idea must be held in the mind for a short time. When we recite, our minds are thinking and holding an idea long enough to consolidate the neural trace in our brain. Without this conscious holding of an idea in our mind, the trace fades. Reciting is also a part of the study method. Why not record this reciting? Then put on the recording when you are washing the dishes, driving to school, relaxing at the beach, etc. It is your own voice. If you listen to the tape a few times you will be able to recall the material on it. The following is an example of what your tape might sound like. In this instance the student took a lot of the information from the summary at the end of the chapter. She understood the material from the reading in the chapter. She used the glossary near the end of the textbook to define any difficult to understand terms. She put this material on the tape because she was afraid that she might have trouble remembering it for the exam: (Student's Voice) There are three stages of memory: encoding, storage, and retrieval. Enclding means change of

the information to a form the memory can accept. Storage is the retention of the encoded information. Retrieval means getting the stored information back. Short-term memory seems to have a limit of seven, plus or minue two chunks. The dual memory theory says that information is transferred from short-term memory to long-term memory by rehearsal of practice.

Many students have come to my office with smiles reporting that this learning tape method made a big difference for them. We would like you to try out this method yourself. We hope that you will be able to get a cassette recorder and get started this week. You can use our tape recorder, but it would be more convenient for you to have your own recorder at home. Use this method to start making a tape to help you review for your final exam. Take the "Learning Tape Construction" Handout (See Appendix B, Item 10) with you to help you remember how to make a worthwhile tape.

The last thing we need to talk about today are your study records for last week and your plans for the rest of this week. Please total the number of minutes that you studied last week, and leave the record in your folder. Now look at your bar graph in your folder and fill in the graph (See Appendix B, Item 7) to show how much you studied during week three of the experiment.

Now, let us consider your plans for the rest of this week. With Thanksgiving approaching, what are some realistic times for you to study this week? When might it be possible for you to begin to make your own "learning tape?" Let us pause for a moment so that you can indicate on your planning sheet some specific times for studying Psychology 105. (Pause) Please continue to use these planning sheets to record your

actual study behavior and bring the sheet with you for your last session next week.

Thank you so much for your participation in this project. If you have any questions about this research Mr. Reilly will be available to answer them. The secretary will arrange your next appointment.

Session V

Thank you for coming in for your final session. In the last session we talked about making a learning tape to help you review for your final exam. Right now we would like to give you some more specific suggestions for making such a learning tape. The summary at the end of each chapter provides information that you will probably need to know well for your final examination. Looking in Chapter Twelve, for example, the final summary contains the type of material that you may want to include in your learning tape: (Student's Voice) An aptitude test measures capacity to learn and predicts what one can accomplish with training; an achievement test measures accomplished skills and indicates what one can do at present. Studies of reliability tell us whether test scores are consistent over time. Studies of validity tell us how well a test measures what it is intended to measure. The first successful intelligence tests were developed by Alfred Binet, who proposed the concept of mental age. A bright child's mental age is above his or her chronological age; a slow child's mental age is below his or her chronological age. The IQ originally expressed intelligence as a ratio of mental age to chronological age. The recent Stanford-Binet tests adjust the IQ so that at each chronological age there is a mean of 100 and a standard deviation of 16.

This example that you have just heard shows how you might use the summary at the end of each chapter in your textbook to make a useful learning tape. There is also considerable information in the chapters which is not included in the final summary. Underline or make notes while you are reading to indicate the material that you may want to record. If you do a good job of identifying the material you need to know, add it to your tape, and listen to the tape several times, your recall will be strong at exam time. We encourage you to make such a tape to help you do well on your final exam.

In previous sessions we have talked about the benefits of monitoring your own time use, making plans, and reinforcing your study behaviors. Let's take a few moments to say a little more about reinforcement. If you have had trouble coming up with reinforcers, a look at the list of reinforcers in your folder may provide some new ideas. Take a minute to glance at the list (Appendix B, Item 11) and see if any new rewards occur to you. (Pause)

You can see from this list that there are many things that can be used as reinforcers. It has been found out recently that even mental images can be used as reinforcers. What's a mental image? Well, its just use of your imagination to picture you a situation, similar to daydreaming that you guide along. In other words, when you finish studying and no reward is available, you can just imagine a scene that might be reinforcing. You might picture being home at the end of the semester and getting your grades and feeling very proud because you did so well. Or picture yourself getting that job you wanted because you finally graduated and had good grades. Or picture yourself getting praise from your family and friends for a good performance. So even if no tangible reward is available, you can use images as rewards. Incidentally, it is

a fine idea to tell family and friends about your self-management project. Their interest and support can be a real help in maintaining a new behavior.

Getting back to the reinforcers, the reason we bring them up again is that this is the last session. Even if you like the idea of "Look, Ask, Say, and Re-Play" method and making a learning tape, how are you going to make sure that you get in the habit of using them?

One technique, that uses reinforcement and that has been shown to be a help in getting students to establish a new behavior is the construction of a behavioral contract. It asks you to specify what behaviors you are going to maintain, and how you will reward these behaviors. We hope that you see the "Look, Ask, Say, Re-Play" method and the "learning tape" as valuable study techniques and want to use them on your psychology assignments for the rest of the semester. If you make out a behavioral contract, it is more likely that you will get yourself to use these techniques. Look at the sample behavioral contract (Appendix B, Items 12 and 13) that is in your folder. Joe Student has indicated that he will try to use the learning tape technique during the rest of the semester, and has set up some rewards to help him do so.

We ask you now to think about some of the reinforcers you have looked at a few minutes ago, and also the use of images, and see if you can construct a realistic contract to guide you for the rest of the semester. We will pause for a few moments to give you a chance to construct your own contract. Be creative! What will work for you? We will pause now to give you time to do your contract, and we will resume shortly. (Pause)

Thank you for constructing your contract. Please leave it in your folder as we would like to see how you put yours together.

The last activity that we would like for you to engage in today is your personal evaluation of this study skills research. In your folder you will find a form called "Your Evaluation for the Experiment" (see Appendix B, Item 14) that asks you to also give your reaction to various parts of the program. Any feedback you can give us will be helpful in improving the program. Your reactions are valuable to us in designing the next stage of the research.

Thank you so much for your participation in this project. If you have any questions about this research Mr. Reilly will be available to answer them. Next semester we will have the results of this study. Stop by, if you are interested, and see the results. Good luck.

APPENDIX B

TREATMENT MATERIALS

APPENDIX B
TREATMENT MATERIALS
ITEM 1

EXPERIMENTAL SUBJECTS
INFORMED CONSENT AND RELEASE FORM

Dear Student,

Do you feel you need to study more or study more effectively to get a good grade on your final in Psychology 105? If so, you are invited to participate in an experiment to field test "Learning Acceleration" tapes.

Volunteers for this experiment will be asked to report five times during the semester (flexible hours, approximately 30 minutes per session, every week) to listen to cassette tapes and use other material designed to help you get a better grade in Psychology 105. We will ask that you try specific strategy methods on your psychology assignments. These procedures use behavioral self-control methods and study techniques that have been shown to improve performance with other students. If you are chosen as a volunteer you will be asked to make a reasonable attempt to carry out these procedures.

Your instructor will not be aware during the semester of which students are participating. You are asked to participate only if you think your study habits need improvement and you will attempt to follow the procedures. Participation is completely voluntary as you may withdraw at any time. In order to construct a proper control group, only some of the volunteers may actually receive the treatment.

As an incentive for those students who are chosen for the experimental treatment, one experimental credit will be offered for each of the five tape sessions which are attended. But the primary reason for

participation should be a desire for a better final grade in Psychology 105, not the experimental credit.

(Please Print)

NAME_____ S.S.#_____

LOCAL PHONE #_____

I agree to release my Psychology 105 grades and SAT scores for this experiment.

Signed_____

Date_____

(Please check one)

I DO want to participate in this experiment. The times I would prefer to come are:

	Monday at	or Tuesday at
(Give times)		
	Other Times I Could Come On Those Days Are:	
(Give Other Times You Could Come)		

OR: I DO NOT want to participate in this experiment.

APPENDIX B
ITEM 2

MCGRAW-HILL BASIC SKILLS SYSTEM
INVENTORY OF STUDY HABITS AND ATTITUDES (ISHA)

Directions:

The statements in this inventory are designed to obtain information about your personal study habits and your attitudes toward studying.

Your task is to read each statement and consider how it applies to you. If it does apply to you, mark the space on your answer sheet for "YES". If it does not apply to you, mark the space for "NO".

Of course, there is no "correct" answer, for the purpose is to find out about your own study habits and attidues. To be sure that you will know how to mark the answer sheet, an answer to each sample item below has been marked on the answer sheet.

SAMPLE A

When I go to class, I am usually well-prepared.

SAMPLE B

Sometimes I get so depressed and discouraged that I can't study.

The inventory contains 49 statements for you to consider. Answer each one honestly and accurately.

You will have 10 minutes to do the inventory. Do not skip any statements.

APPENDIX B
ITEM 2

1. My class notes are sometimes difficult to understand later.
2. I often sit in class and forget to take notes.
3. I need to put in more time on my schoolwork.
4. In general, I think my study habits are good.
5. I tend to get along well with teachers.
6. When I don't like a course, I can't seem to study much.
7. Much of what I have to study will be of little use to me.
8. It is usually hard to me to get started on my schoolwork.
9. I need to plan my time better.
10. I am usually up to date in my schoolwork.
11. I tend to daydream when I study.
12. I tend to study where it is very quiet.
13. I often get moody and can't study at all.
14. Sometimes I can't do my best on examinations because I am so nervous and tense.
15. When making notes on a lecture, I have trouble picking out the main points.
16. My class notes are usually disorganized, even if the lecture was well-organized by the teacher.
17. I spend an average of twenty hours a week or more studying.
18. I always make an outline of a theme or report before I begin writing it.
19. I sometimes have trouble in courses because I don't agree with the teacher.

20. I skip classes that I could just as easily attend.
21. I think I have trouble studying because I don't know what my goals are.
22. I always put studying first.
23. I use my study time efficiently.
24. I tend to put things off much more than most students.
25. I can concentrate well when I study even if the material is quite dull.
26. I often try to study with the radio or TV turned on.
27. My studies cause me a lot of worry.
28. Often some thought or idea keeps coming to me, and I can't study thinking about it.
29. I often miss important lecture information because I am busy making notes on earlier material.
30. I seem to get the wrong material into my class notes.
31. I usually try to make a systematic review before a test.
32. I am eager to do my very best in my schoolwork.
33. I participate more than most students in class discussions.
34. I usually like the subjects I am studying.
35. If I have trouble in a course, I tend to give up in discouragement.
36. I often consider dropping out of school.
37. I often study in a haphazard, disorganized way under the threat of the next test.
38. It is very difficult for me to stick to a study schedule.
39. I can usually sit and study for long periods without becoming tired or distracted.
40. I have a tendency to become sleepy in classes.

41. I am under a lot of tension when I study.
42. I sometimes get so worried about a personal problem that I can't study.
43. I can take good notes if the teacher presents material in an organized way.
44. Before I go to class, I try to test myself to be sure that I know the material I have studied.
45. My approach to studies is usually active rather than passive.
46. I try to take courses so that I will not have to study hard.
47. Sometimes I let the work in a course pile up, then cram madly at the end.
48. I am easily distracted from my schoolwork.
49. I get so upset about little things that I can't study.

APPENDIX B
ITEM 3

PSY 105 DAILY STUDY RECORD

Name Joe Student

DAY	TIME OF DAY (Start Stop)	AMOUNT OF TIME Minutes	ACTIVITY # of Pages	REWARD I Gave Myself
MON.	1:15 - 2 p.m.	45	Read Text p. 15-30	Music
TUE.				
WED.	7 - 8:30 p.m.	90	Read Text p. 30-37 Workbook p. 9-12	Ice Cream
THU.	2 - 3 p.m.	60	Reviewed Class Notes	Time Magazine
FRI.				
SAT.				
SUN.	6 - 8 p.m.	120	Read Text p. 37-60 Reviewed Class Notes	HBO Movie

Please bring this sheet with you when you return for your next session.

APPENDIX B
ITEM 4

PSY 105 DAILY STUDY RECORD

NAME _____

DAY	TIME OF DAY (Start Stop)	AMOUNT OF TIME Minutes	ACTIVITY # of Pages	REWARD I Gave Myself
MON.				
TUE.				
WED.				
THU.				
FRI.				
SAT.				
SUN.				

Please bring this sheet with you when you return for your next session.

APPENDIX B
ITEM 5

UNC-W COUNSELING AND TESTING CENTER
HOW TO BE TEST WISE

Taking Multiple-Choice Examinations:

The following is a list of clues that sometimes help in picking the correct alternatives on objective tests when you are not completely sure of your answer. The test wise student takes advantage of clues which the instructor may put in when he writes the test. If you search for and make use of these clues when you are in doubt about a test answer, you will get a higher score.

I. CLUES IN THE ALTERNATIVES

The first main type of clue concerns the list of alternatives in a multiple-choice item. Four factors are frequently associated with the correct alternative.

A. Most General Alternative

The correct alternative is sometimes the most general, since the most general alternative includes the most information. You will often find a list of items that have some very technical and specific alternatives and one alternative which is more general. Chances are the most general alternative is the correct one. For example:

1. The lungs

a. are solid and immobile and located within the chest.
b. are the only organs that produce insulin.
c. function primarily in respiration.
d. possess the sphincter of Oddi.

Even, if you aren't sure of the correct answer, you can see that the alternatives a, b, and d all deal with specific facts and details about the lungs. C deals with a main feature of the lungs, respiration. Since c is the more general answer and allows for more variability, it is the correct answer.

Pick the best choice in the following example:

2. Psychological research

   a. involves only human studies.
   b. involves only animal studies.
   c. can involve the study of both humans and animals.
   d. involves animals similar to humans (such as apes) only.

B. Length

The correct alternative is sometimes the longest. Most tests are somewhat consistent about the length of correct answers. If you notice that most of the correct answers have been the shortest, then when you aren't sure, pick the shortest. If, on the other hand, most of the correct answers have been the longest, pick the longest answer when you are unsure. If you have noticed no particular trend for either the longest or the shortest, try the longest.

For example:

1. $3 + (7+1) = 3 + 7 + 1$ because

   a. $3 + 7 + 1 = 11$
   b. parentheses preceded by an addition sign may be removed without changing the signs of any numbers inside the parentheses. (The association law of division).
   c. division is indicated.
   d. parentheses preceded by a minus sign may be removed.

In this item, b is longest and therefore is most likely correct. In this case, it is correct.

Pick the best choice in the following example:

2. The experimental method

   a. is so complex that it cannot produce the same results twice.
   b. provides a possibility for proving a hypothesis: the experimenter can repeat the experiment and continue to obtain the same results.
   c. is now not as popular as the survey method.
   d. is used only in biological settings.

C. Middle Value

The correct alternative is sometimes of middle value. If the alternatives range in value--old to new, early to late, big to small--and you are not sure which one is correct, eliminate the extremes and pick from the middle value or values. For example if the item reads:

1. The mature human being has how many teeth?

   a. 15
   b. 32
   c. 54
   d. 7

Eliminate the two extreme values, c and d. Since 54 and 7 are extreme alternatives, they are probably not correct. Therefore, you are left with two alternatives from which to pick your answer.

Pick the best choice in the following example:

2. A social attachment between infant and mother becomes obvious when the infant is

   a. one month old.
   b. four months old.
   c. between six and nine months.
   d. between nine months and one year.

D. Two Alternative Mean the Same

The correct alternative is probably not one of a pair of similar statements. If two alternatives mean the same thing, and there is only one correct answer, you can eliminate both of them. Neither will be correct. Then make your choice from the remaining alternatives.

Example:

1. The mnemonic system of taking an imaginary walk and locating images of objects to be remembered along the route is called the

   a. mental walk system
   b. method of imagery
   c. image-organization technique
   d. method of loci

Since alternatives b and c have similar meanings, choose your one answer from alternatives a or d. The correct choice is d.

Pick the best choice in the following example:

2. When subjects were confronted with studies involving embarrassing actions, researchers found that the persons tended to prefer to

   a. be with others
   b. be with peer
   c. be alone
   d. discuss the experiment

E. Two Alternatives are Opposite

The correct alternative is sometimes one of a pair of direct opposites. If you notice that two alternatives have opposite meanings, one of them is probably correct. Here is an example:

1. The planarian has:

   a. an anterior brain.
   b. three legs.
   c. red eyes.
   d. a posterior brain.

Notice that alternatives a and d are opposite. Therefore, you would eliminate the other two alternatives, because it's rather likely that if two opposite alternatives are given, one of them is correct. In this item, a is the correct response.

Pick the best choice in the following example.

2. Holding a card over the left eye and looking at a two dimensional drawing of a street in Paris is an example of using:

   a. monocular cues.
   b. binocular cues.
   c. bi-stabile cues.
   d. superimposition.

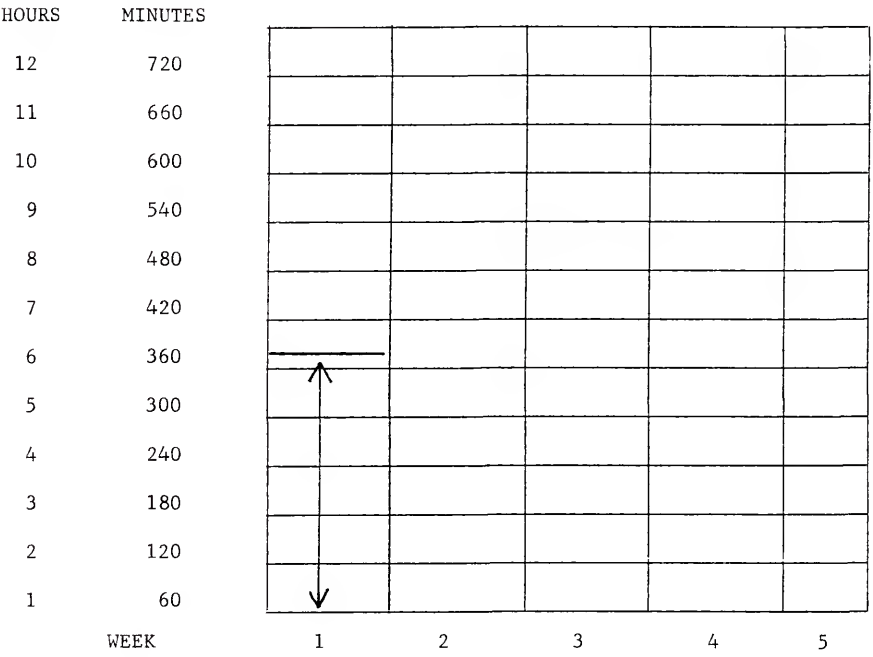
F. Summary

Now let's summarize the review of response clues. When you are given a list of alternatives and are not sure which is correct, look for the degree of generalization, the length, middle values, and similarities or opposites in the statements. Pick the most general answer instead of a specific. Choose either the longest or shortest alternative depending on the trend seen in the rest of the test. If you have noticed no trend, pick the longest alternative. Eliminate the extreme values, and choose the alternative with the middle value.

APPENDIX B
ITEM 6

SAMPLE

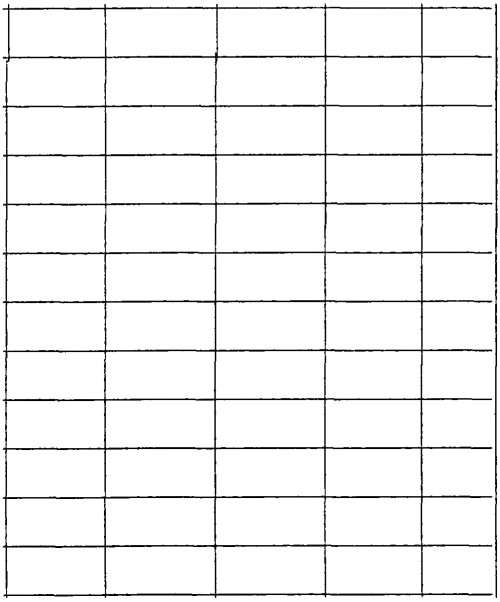
FOLDER TIME ON TASK GRAPH FOR Joe Student



APPENDIX B
ITEM 7

FOLDER TIME ON TASK GRAPH FOR _____

HOURS	MINUTES
12	720
11	660
10	600
9	540
8	480
7	420
6	360
5	300
4	240
3	180
2	120
1	60
WEEK	1 2 3 4 5



APPENDIX B
ITEM 8

UNCW COUNSELING AND TESTING CENTER
TIME MANAGEMENT

TIME IS LIFE. It is irreversible and irreplaceable. To waste your time is to waste your life, but to master your time is to master your life and make the most of it (Lakein, 1973).

Reasons for Programming Time

The Value	The Reason
Get you started	We all know how hard it is to get started. Often a well-planned schedule can be the external force that gives us a shove.
Prevents avoidance of disliked subjects	The mind can play tricks. Without actually deciding to do so, we can crowd out doing something we don't like by occupying ourselves with favorite subjects.
Monitors the slackening off process	By looking over how our time is apportioned, we can keep ourselves from slackening as the semester wears on.
Eliminates the wrong type of cramming	If the cramming that takes place just before exams is to be effective, the original studying and learning must take place day by day.
Makes studying enjoyable	When done without the pressure of time, studying and learning can be intensely interesting.
Promotes cumulative review	Sandwiching in short review periods is the best way to retain knowledge, as well as to prepare for future exams. It is better to review a subject in four distributed 30-minute sessions than in a single massed two-hour session. In massed practice, fatigue and boredom set in. In a short unit of time, extra effort is put forth, as in a sprint.

Frees the mind	To keep from forgetting details, we may mentally cycle and recycle them. This often leads to a tense feeling of pressure and confusion. Putting the things-to-do on paper takes them off the mental treadmill.
Controls the study break	Rewarding yourself with a ten-minute break when you finish a scheduled block of study helps minimize "clock watching." During short breaks, stand up, walk around, or just stare out the window-but keep in mind the subject you're studying. Then you won't need a warm-up period when you resume studying.
Precludes overlooking recreation	It is unrealistic to omit physical and social activities from your program. They are needed for a well-balanced personality, good health, and more efficient study sessions. On the other hand, imbalance that permits extra-curricular activities to outweigh studies probably accounts for more failures in college than anything else.
Helps raise your recreational efficiency	One of the saddest wastes of time and pleasure is to intermix study time and recreation time; that is, when we are studying, we keep thinking how nice it would be to be playing some game; and when playing, we think about all the studying that needs to be done. Consequently, we perform neither one of these tasks to the best of our ability, or at the highest efficiency.
Regulates our daily living	Without a plan to guide us, assignments are bound to pile up. When they do, we lose control, and our daily living is thrown into chaos. With a schedule, even weekends and holidays can be free from worry.

How To Make A Schedule

Eliminate dead hours	Make each block of one hour a productive unit. Some of the most important lessons of our lives are learned in less time.
Use daylight hours	Research shows that each hour used for study during the day is equal to one and a half hours at night.
Study before recitation-type classes	For a course in which you recite and discuss, it is an advantage to study just before class. The material will be fresh in your mind.

Study after lecture-type classes	For a lecture course, retention and understanding are aided by a review of your lecture notes immediately after class.
List according to priorities	By putting first things first, you are sure to get the most important things done on time.
Avoid too much detail	There is always the temptation to over-organize. Packing a weekly schedule too solidly and with too many details is a waste of time for two reasons: first, the time it takes to make such a schedule could be better used in studying a subject directly; second, the chances of following such a schedule are very, very slim.
Know your sleep pattern	We all have daily cycles when we are naturally sleepy and when we are naturally alert. If your work, classes and circumstances permit it, sleep when you're sleepy and study when you're naturally alert. An example: one student said he fought sleep from seven o'clock until midnight while he tried to study; and he couldn't fall asleep from midnight until almost morning while in in bed. Upon hearing my suggestion, he reversed the process and achieved high grades.
Discover how long to study	The rule of thumb that you should study two hours for every hour in class is a rough guide at best. The time required per subject varies from student to student and from subject to subject. So start out allowing two hours of study for every hour in class, but start to adjust the hours according to your experience, as you find out how long it takes to master your assignment, not simply to "cover" it.
Plan blocks of time	Research studies by psychologists show that optimum efficiency is reached by planning in blocks of one hour: fifty minutes to study; ten minutes for a break.
Allow time for sleep	The necessity for eight hours sleep every night is supported by medical evidence. We should make no mistake about it, the quality of one's education depends on sufficient sleep. Sacrificing sleep to gain time for study starts a vicious circle.

Eat well-balanced meals	Take time for good meals. Living on greasy foods or other low-protein diets most of the time is no way to treat the body and brain. Dietary deficiencies result in lack of pep, irritability, and fatigue.
Double your time estimates, and start long jobs ahead of time	Most people tend to underestimate time. To avoid discovering the hard way that you cannot bang out a 1500-page paper in three hours the evening before it is due, start ridiculously early and allow more time.
Make a plan for living	Your schedule must be a plan for living, not merely for studying. After all, life, even while attending college, is many-sided, and its many sides must be recognized.

References

Lakein, A. 1973. How to get control of your own life. New York: Peter H. Wyden, Inc.

Pauk, W. 1974. 2nd ed. How to study in college. Boston: Houghton Mifflin Company.

APPENDIX B
ITEM 9

LOOK, ASK, SAY, RE-PLAY STUDY HANDOUT

Mastering a Textbook

To effectively master a textbook reading assignment, two concepts must be covered: 1) Read actively, and 2) Mark your textbook.

1) Look: Glance over the entire chapter to see the main points that will be developed. Read the main headings and chapter summary before reading anything else! This will allow you to read the chapter with a purpose since you already have a good notion of the main ideas. Also, don't forget to look at the summary questions at the end! Remember memory is better in a context.

2) Ask: Turn the main headings into questions. This will force you to read the following material with the intent of answering the questions. After all, by listing a main heading, the author is practically telling the reader that, "here is a main idea I want to discuss in the next few paragraphs." Be active.

Go to work! Read actively - to answer the question posed in the main headings. Read "paragraph by paragraph." If you have just read a paragraph and cannot answer the question, "what did the author just say," then reread until you can answer the question! What do I need to know? Underline or write out.

3) Say: Reciting important points to combat forgetting is the most powerful technique known to psychologists. Technical explanation: To transfer a memory trace from the short-term memory to the long-term memory, the idea must be held in the mind for a short time. When we recite, our minds are thinking and holding an idea long enough to consolidate the neural trace in our brain. Without this conscious holding of an idea in our mind, the trace fades. If you can't say it, you don't know it.

4) Re-Play: Pull the separate facts and ideas together into a unified whole. If you have followed the pattern of study described here, you have gone from a very general view of the material to a look at specific details and facts. Now you need to step back again and view the material as a whole. Look at the headings again and read the chapter summary once more. Forgetting takes place rapidly; you need transfer to permanent memory. So, make it part of your routine to always look at old material before reading new material.

APPENDIX B
ITEM 10

LEARNING TAPE CONSTRUCTION HANDOUT

Benefits of the Tape Method

1) Get you organized.
2) Keeps you active.
3) Makes you recite.
4) Helps you remember the material.
5) Can be used while driving or doing chores.
6) Has the novelty of a new approach.
7) Creates a review system.

How To Construct

1) Boil down readings and notes to most important parts. You still have to do the reading as you have always done to identify the content that you want to recall.

2) Pay special attention to definitions, chapter summaries, and topics stressed in lecture. Materials from your lecture notes should be included in your tape.

3) Record in a loud, clear voice. Stop and test if the recorder is making a good tape. If it is not easy to hear, the tape has little value.

4) Add important new material to your tape after each study session.

5) Listen to the tape often. Put it on during your chores, or when doing some activity that doesn't require concentration. Get production out of time that used to be wasted. If you are taking a nap, put the tape on. Research shows that you can learn in the twilight state before sleep. If you have a player in your car, listen while driving.

6) Listen, listen, listen. It is your own voice. If you listen a few times, you will find that your recall is great.

7) Following these steps gives you a product that sets you up for a great final review session. We think that you will find this a lot more effective than just looking over your notes. Good luck!

APPENDIX B
ITEM 11

LIST OF REINFORCERS

1. Eating
   a. ice cream
   b. candy
   c. fruit
   d. pastry
   e. nuts
   f. cookies
   g. salad
   h. steak
   i. lobster
   j. _____

2. Drinking beverages
   a. water
   b. milk
   c. soft drink
   d. tea
   e. coffee
   f. _____

3. Drinking alcoholic beverages
   a. beer
   b. wine
   c. hard liquor

4. Solving problems
   a. crossword puzzles
   b. math problems
   c. figuring out how something works

5. Listening to music
   a. classical
   b. country western
   c. jazz
   d. show tunes
   e. rhythm and blues
   f. rock and roll
   g. folk
   h. popular

6. Petting animals
   a. dogs
   b. cats
   c. horses
   d. _____

7. Watching sports
   a. football
   b. baseball
   c. basketball
   d. track
   e. golf
   f. swimming
   g. running
   h. tennis
   i. pool
   j. other

8. Reading
   a. adventure
   b. mystery
   c. famous people
   d. poetry
   e. travel
   f. true confessions
   g. politics and history
   h. how-to-do-it
   i. humor
   j. comic books
   k. love stories
   l. spiritual
   m. sexy
   n. sports
   o. medicine
   p. science
   q. newspapers

9. Looking at interesting buildings

10. Looking at beautiful scenery

11. Watching TV

12. Attending movies

13. Listening to radio

14. Singing
    a. alone
    b. with others

15. Dancing
    a. ballroom
    b. discotheque
    c. ballet/interpretive
    d. square dancing
    e. folk dancing

16. Performing on a musical instrument

17. Playing sports
    a. football
    b. baseball
    c. basketball
    d. track and field
    e. golf
    f. swimming
    g. running
    h. tennis
    i. pool
    j. boxing
    k. judo or karate
    l. fishing
    m. skin diving
    n. auto or cycle racing
    o. hunting
    p. skiing
    q. _____

18. Shopping
    a. clothes
    b. furniture
    c. auto parts and supply
    d. appliances
    e. food
    f. sports equipment
    g. _____

19. Gardening

20. Playing cards

21. Hiking or walking

22. Completing a difficult job

23. Camping

24. Sleeping

25. Taking a bath

26. Taking a shower

27. Being praised
    a. about your appearance
    b. about your work
    c. about your hobbies
    d. about your physical strength
    e. about your athletic ability
    f. about your mind
    g. about your personality
    h. about your moral strength
    i. about your understanding of others

28. Having people seek you out for company

29. Flirting

30. Having somebody flirt with you

31. Talking with people who like you

32. Making somebody happy

33. Being around babies

34. Being around children

35. Being around elderly men

36. Being around elderly women

37. Being around people

38. Having people ask your advice

39. Watching other people

40. Somebody smiling at you

41. Making love

42. Being close to an attractive person

43. Talking about the opposite sex

44. Talking to friends

45. Being in church or temple

46. _____

(after Cautela, 1967)

APPENDIX B
ITEM 12

STUDY PARTICIPATION CONTRACT

I agree to make an effort to gain a high grade in Psychology 105 by recording study behavior and attempting to use the study behavior assigned to me. In an attempt to get myself in the habit of using this study method, I will reward my own use of said study method in the following manner:

(Please state how you intend to reward yourself each time you study using your method. Tell the type of reward you will give and under what conditions. Look at the attached sample contract).

Signature_____

APPENDIX B
ITEM 13

STUDY PARTICIPATION CONTRACT

I agree to make an effort to gain a high grade in Psychology 105 by recording study behavior and attempting to use the study behavior assigned to me. In an attempt to get myself in the habit of using this study method, I will reward my own use of said study method in the following manner:

(Please state how you intend to reward yourself each time you study using your method. Tell the type of reward you will give and under what conditions.

Each time I study using Look, Ask, Say, Re-Play and/or the learning tape I will give myself a candy bar, orange juice or other similar reward. Also, I will use magazines as reinforcers. If no reward is available, I will just picture myself being very happy in the future, taking tests and knowing I will get a good grade because I know the material.

Joe Student
Signature

APPENDIX B
ITEM 14

YOUR EVALUATION OF THE EXPERIMENT

Name_____

Please circle yes or no to the following questions.

1. The techniques suggested in the tapes helped me increase the amount of time that I spent studying. YES NO

2. These techniques improved my attitude toward studying. YES NO

3. These techniques helped me to learn material better. YES NO

4. These techniques helped me to remember material better. YES NO

5. These techniques made me feel more in control of my studying. YES NO

6. I made my own "learning tape". YES NO

7. The study records that I kept were pretty accurate. YES NO

8. I usually gave myself some reward for studying. YES NO

9. I believe that these rewards helped me get on task. YES NO

10. I will use these techniques in other classes or study situations. YES NO

11. What did you like about the experiment?

12. What did you dislike?

13. Can you suggest anything or give us any additional feedback that would help us when we run a similar experiment?

APPENDIX C

RELIABILITY DATA AND PILOT STUDY

APPENDIX C

RELIABILITY DATA AND PILOT STUDY

STUDY SKILLS TEST--RELIABILITY DATA

Item Difficulties for MHBSS Inventory of Study Habits and Attitudes
(N=1787)

N*		G*		R*		M*		O*		C*		E*	
Item No.	p	Item No.	p	Item No.	p	Item No.	p	Item No.	p	Item No.	p	Item No.	p
1	.55	3	.16	5	.94	7	.76	9	.24	11	.38	13	.44
2	.60	4	.43	6	.30	8	.37	10	.62	12	.60	14	.47
15	.68	17	.19	19	.75	21	.70	23	.38	25	.26	27	.51
16	.76	18	.33	20	.77	22	.11	24	.73	26	.50	28	.24
29	.72	31	.78	33	.33	35	.73	37	.58	39	.22	41	.70
30	.87	32	.70	34	.76	36	.87	38	.24	40	.46	42	.41
43	.88	44	.43	45	.53	46	.79	47	.36	48	.36	49	.75
Mean	5.05		3.02		4.38		4.32		3.15		2.78		3.53
Med.	5		3		5		5		3		3		4
SD	1.77		1.65		1.51		1.51		2.03		1.82		1.94
KR-20	.68		.58		.50		.55		.74		.62		.68
Std. error of meas.	1.01		1.08		1.06		1.01		1.04		1.13		1.09

*N--Listening and Note-taking
G--General Study Habits
R--Relationships with Teachers and Courses
M--Motivation

*O--Organization of Effort
C--Concentration
E--Emotional Problems

APPENDIX C
ITEM 16

RELIABILITY COEFFICIENTS

	MHBSS Study Skills Test		MHBSS Inventory of Study Habits and Attitudes
	Form A	Form B	
KR-20	.78	.80	.87
N	935	941	1787
Mean	37.74	38.37	21.21
Median	38	39	21
SD	7.73	8.06	7.48
Std. error of meas.	3.65	3.63	2.71

APPENDIX C
ITEM 17

RESULTS OF SUMMER SESSION 1982 PILOT STUDY

A pilot study was conducted during the second summer session of 1982 with student volunteers from an Introductory Psychology class at the University of North Carolina at Wilmington. Students were invited to participate in a research project involving "learning acceleration" tapes to improve study habits. Volunteers received two experimental credits for participation in the first two treatment sessions. There was no extrinsic reward for participation in the last two sessions. Twenty-seven students signed up for the treatment (from a class of forty). Twenty-one students started the treatment, and 16 completed all four sessions.

The pilot treatment consisted of an abbreviated form of the treatment to be used in the main study. The pilot treatment consisted of four sessions, spaced at weekly intervals, in which students listened to an audio-cassette recording of study improvement suggestions. They completed planning charts, graphs and other materials that were kept in their folders.

The objective of the pilot study was to field test the materials and procedures, and obtain feedback to improve the main study. No attempt was made to form a control group, so the differences in achievement could be attributed to selection bias. However, the fact that participants achieved significantly better grades than non-participants was encouraging. Chart A reports the results of the pilot study.

Chart A

"Learning Acceleration" Treatment--Preliminary Findings

	Participants (N=16)	Non-Participants (N=19)
Final Grade Mean (t (33) = 3.19, p .01)	3.125	2.0
Final Exam Mean (t (33) = 2.58, p .02)	87.05	78.17
	Pre	Post
Inventory of Study Habits and Attitudes (t (15) = 2.95, p .01)	29.93	33.43

Participants earned a full grade point higher on their course grade than non-participants. In addition, the final exam score was 8.88 points higher for participants than for non-participants. Also, participants showed a significant gain in study habits and attitudes as measured by the McGraw-Hill Inventory of Study Habits and Attitudes after receiving treatment. The students' evaluation of the experiment was favorable and is presented in Chart B.

Responses to open-ended questions indicated that students thought that the treatment was worthwhile and enjoyable. There were suggestions that more contact with the counselor might have enhanced the treatment.

Chart B

Student Evaluation of Experiment
(Pilot Study)
N=16

1.	The techniques suggested in the tapes helped me increase the amount of time that I spent studying	62%	Yes	No	37%
2.	These techniques improved my attitude toward studying.	87%	Yes	No	12%
3.	These techniques helped me to learn material better.	93%	Yes	No	6%
4.	These techniques helped me to remember material better.	81%	Yes	No	18%
5.	These techniques made me feel more in control of my studying.	75%	Yes	No	25%
6.	I used the study guide work book at least once.	31%	Yes	No	68%
7.	The study records that I kept were pretty accurate.	100%	Yes	No	0%
8.	I usually gave myself some reward for studying.	68%	Yes	No	31%
9.	I believe that rewards improved my studying.	43%	Yes	No	56%
10.	I will use these techniques in other classes or study situations.	93%	Yes	No	6%

APPENDIX D

FEEDBACK FROM EXPERIMENTAL SUBJECTS COMPLETING TREATMENT

APPENDIX D

FEEDBACK FROM EXPERIMENTAL SUBJECTS COMPLETING TREATMENT

Response to Open-Ended Questions (Items 11, 12, 13 of Students Evaluation of Experiment).

What did you like about the experiment? (Item 11)

It helped me to realize that I need to repeat to myself in order to really know the material. Gave me a better outlook for studying.

It helped me learn how to study. I remember the techniques and benefits used.

I thought the techniques introduced could be very helpful.

It helped me in study habits, although I did not increase studying time, I did study much better with the study time I used as prior.

It did help me remember things better and improved my grades.

It helped me to begin studying because I had reason to not just for the class but for the sessions where my recorded times were asked for.

It helped a lot in my study habits.

It was fun--good tips on test taking and studying, listening to the tape each time. The sheets of information are very important, it's good to give them out.

I liked the study guides that were handed out so you could keep record of studying time. It made me want to study more. Rewards helped.

The different methods in which to remember information.

It gave me a much better attitude toward studying. The study method given is practical and it does help. The whole idea of this experiment has made me study more in all my classes.

Listening to the tapes and reading the handouts you gave me, helped me learn and made me feel more confident about the final exam.

Used my time wisely.

Improved my study habits in general.

The study tape especially. I found it very helpful in knowing and remembering the information.

It showed me different ways to organize and take advantage of my study time.

It helped me organize my work load and to get more done in the amount of time I had.

It enabled me to keep up with my reading.

The experiment made me become more interested in studying, and I really got involved with my school work.

Motivate myself to study and it helped me organize my material and study habits.

The new methods of study I learned as a result of the experiment.

Better ways of studying and learning material I needed to know.

The knowledge attained from it did help me in my further studies.

I liked the methods given by which you can study. I believe they will help in studying for other classes.

I learned valuable study techniques that can be used in future studying.

It gave me more guidelines to study at certain times. Also, it helped me to take additional time to study more psychology.

It made me want to study - it was a challenge.

The experiment made me think more and plan exactly what I needed to study.

Each technique had been helpful to me.

The new study techniques that were suggested to me and the handouts on studying. Test taking that I was able to keep.

The different ways that you can study and really be interested in studying.

Learning about taking tests and studying.

I think this experiment made me realize that I didn't study enough.

I liked the techniques for studying taught in the experiment. It's easier to study when you know you're going to get good results.

Writing the study times. When I was able to follow my study time sheet I felt proud, especially if I put in extra time.

Listening to the tapes.

By having the "Daily Study Record" I saw that I wasn't applying myself to the subject and every week I tried to increase my amount of time studying.

It not only got me to study Psychology more, but my other classes as well.

It made me realize some of the ways I was studying.

What did you dislike? (Item 12)

Using a tape for studying.

I know that time is valuable, but a personal instructor would of resulted in more participation.

It's hard for me to set down a studying schedule and stick to it.

I didn't feel I was in control of my study habits but that someone else was.

Coming so many times to the experiment.

I'm really uncomfortable listening to my voice on tape but I'm getting use to it.

At the beginning of the experiment it was very hard to getting myself motivated to start.

Being the only person in here.

The times that I had to come in, like at 2:00 p.m. on Mondays.

I don't think we need rewards to make ourselves study. The reward should be the grade you get.

Having to state exact times for studying. I would rather say I would study for 90 minutes during a specified day rather than from 7-8:30 since my schedules with other homework are unpredictable.

The impersonal feeling I received from the tape.

I would occasionally forget to keep track of my studying.

That it takes an experiment to make me study more.

Didn't last long enough for me to evaluate a change in my habits - sessions too few.

I didn't feel there was enough structure and therefore I didn't keep accurate study charts.

Make the experiment in a two 1 hour session rather than coming for 5 sessions.

Having to walk so far to get to this building.

Charting study time. It made me realize how little I really studied.

The part of giving myself a reward. I think my reward after each time studying was knowing that I was trying to keep with my chart. Maybe my reward was not being punished by my superego.

I originally thought it would be an extra "review" sort of experiment and slightly disappointed but it did help me.

I did not have that much time to put into it because of my other classes.

Can you suggest anything or give us additional feedback that would help us when we run a similar experiment? (Item 13)

A personal confrontation would have resulted in more participation, all the techniques used were interesting ways to go about studying. Studying with a certain approach or procedure is much more rewarding than studying without a certain technique. To just open a book and memorize is not half as interesting as listening to a tape that you made. I felt all the techniques helped, and I hope to do well on the exam.

Bring out the lists of rewards or reinforcers sooner. The rewards helped from a psychological stand point so more "exact examples" should be suggested at the beginning of the experiment.

Have the people come less times and do more in the sessions.

Do some of the methods in the class before letting the subjects try it out on their own.

My grades have gradually improved and I'm grateful for the chance I had to participate. I think it's unfortunate that some people quit coming. You might want to keep the credit slips until the end. Does that sound mean?

More detail in studying habits even when I did set times down to study I rarely did. I would like to know of something that could help me stick to these times.

I think that coming in more than once a week may be helpful to keep students from putting off their study time.

Maybe you could give the students better ideas for studying and taking Science - Chemistry, Biology, etc. classes and tests. The classes are very difficult and also very hard to keep an interest in after a certain period of time has gone by.

I think that it would be more effective if a teacher was talking instead of a tape.

The techniques presented were very useful, if you can get into the habit of doing them.

Maybe try a human being instead of a tape recorder for better attendance.

It should be longer so that the people in the experiment can really learn more techniques in studying and practice them more while in the experiment.

Check study charts. Run the experiments closer together.

Instead of the tapes you could have someone come in and say it instead of a tape.

I wish more people would have attended. If there were more, maybe you could arrange small groups for studying outside of this experiment.

The techniques really work if you're serious about using them. I think a class should be offered teaching them. I was discouraged from taking Psychology 110 which teaches these methods. The advisors should push this class, especially on Freshmen.

Part of the reason I was able to do so well is because the instructor gave us a study guide before each test. It told us exactly what we had to know for the test. Before this experiment I would dutifully read it and promptly lose it. This gave me incentive to actually use the study guide.

Don't make the person come in on a set given day of week. Let them have an option such as Monday or Tuesday of each week.

To keep an accurate study record.

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BIOGRAPHICAL SKETCH

Edward J. Reilly was born on October 7, 1946, in Yonkers, New York. He was graduated from Yonkers High School in 1964, and received a Bachelor of Arts degree in English from Hunter College of CUNY in 1968. Upon graduation he taught English, Spanish, and English as a Second Language (ESL) at Longfellow Junior High School in Yonkers, New York. He also taught ESL part-time for SUNY Purchase and Hostos Community College of CUNY. After leaving Yonkers, he taught ESL for the Berlitz School of Languages in Hato Rey, Puerto Rico. After returning from Puerto Rico, he married Catherine Anderson in 1974, and they moved to Jacksonville, Florida. In Jacksonville, he worked as a teacher for emotionally disturbed students in a psychiatric setting.

He entered graduate school of the University of Florida where he received the Master of Education and Specialist in Education degrees in counselor education in December, 1977. He was admitted to the doctoral program in the winter quarter of 1978. In April of 1979 he accepted a position as a psychological counselor in the Counseling and Testing Center at the University of North Carolina at Wilmington and is still employed in that position.

He has one daughter, Jessica Jean, born on December 3, 1978.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

H. C. Riker, Chairman
Professor of Counselor Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Janet J. Larsen
Associate Professor of Counselor Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Elois M. Scott
Associate Professor of Instructional Leadership and Support

This dissertation was submitted to the Graduate Faculty to the Department of Counselor Education in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dean, Graduate School